EXHIBIT J

LITHIUM HUB'S INFRINGEMENT ANALYSIS

U.S. Patent No. 9,412,994 – RELiON RB100-HP

Independent Claims 1 and 14

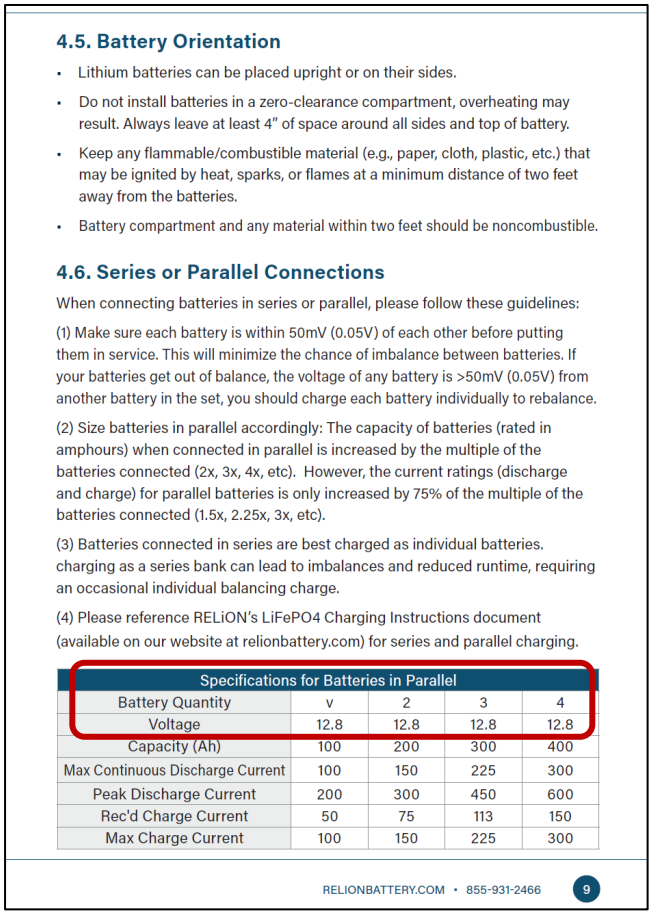
Lithium Hub provides evidence of infringement of independent claims 1 and 14 of U.S. Patent No. 9,412,994 (hereinafter "the '994 patent") by RELiON. In support thereof, Lithium Hub provides the following claim charts.

"Accused Products" as used herein refers to at least RELiON RB100-HP and the Accused Products enumerated in the Complaint. These claim charts demonstrate RELiON's infringement by comparing each element of the asserted claims to corresponding components, aspects, and/or features of the Accused Products. These claim charts are not intended to constitute an expert report on infringement. These claim charts include information provided by way of example, and not by way of limitation.

Unless otherwise noted, LithiumHub contends that RELiON directly infringes the '994 patent in violation of 35 U.S.C. § 271(a) by selling, offering to sell, making, using, and/or importing the Accused Products. *See, e.g.*, RELiON website (available at: https://www.relionbattery.com/products/lithium/rb100-hp). The following exemplary analysis demonstrates that infringement. Unless otherwise noted, LithiumHub further contends that the evidence below supports a finding of indirect infringement under 35 U.S.C. §§ 271(b) and/or (c), in conjunction with other evidence of liability under one or more of those subsections. RELiON makes, uses, sells, imports, or offers for sale in the United States, or has made, used, sold, imported, or offered for sale in the past, without authority, or induces others to make, use, sell, import, or offer for sale in the United States, or has induced others to make, use, sell, import, or offer for sale in the past, without authority products, equipment, or services that infringe claims 1, 4-9, 11-16, 18-23 of the '994 patent, including without limitation, the Accused Products.

Unless otherwise noted, LithiumHub believes and contends that each element of each claim asserted herein is literally met through RELiON's provision of the Accused Products. However, to the extent that RELiON attempts to allege that any asserted claim element is not literally met, LithiumHub believes and contends that such elements are met under the doctrine of equivalents. More specifically, in its investigation and analysis of the Accused Products, LithiumHub did not identify any substantial differences between the elements of the patent claims and the corresponding features of the Accused Products, as set forth herein. In each instance, the identified feature of the Accused Products performs at least substantially the same function in substantially the same way to achieve substantially the same result as the corresponding claim element.

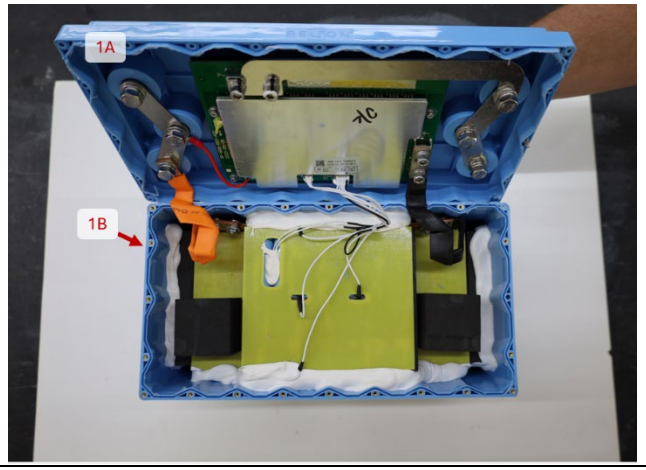
To the extent the chart of an asserted claim relies on evidence about certain specifically identified Accused Products, LithiumHub asserts that, on information and belief, any similarly functioning Accused Product also infringes the charted claim. LithiumHub reserves the right to amend this infringement analysis based on other products made, used, sold, imported, or offered for sale by RELiON. LithiumHub further reserves the right to amend this infringement analysis by adding, subtracting, or otherwise modifying content in the "Accused Products" column of each chart.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
Claim 1	
[1p] A battery pack for driving an electrical device in a 12 volt to 120 volt operating system, said battery pack having a positive terminal and a negative terminal, comprising:	To the extent the preamble is limiting, the RELiON RB100-HP is a battery pack for driving an electrical device in a 12 volt to 120 volt operating system.   **4.5. Battery Orientation** ▪ Lithium batteries can be placed upright or on their sides. ▪ Do not install batteries in a zero-clearance compartment, overheating may result. Always leave at least 4" of space around all sides and top of battery. ▪ Keep any flammable/combustible material (e.g., paper, cloth, plastic, etc.) that may be ignited by heat, sparks, or flames at a minimum distance of two feet away from the batteries. ▪ Battery compartment and any material within two feet should be noncombustible. **4.6. Series or Parallel Connections** When connecting batteries in series or parallel, please follow these guidelines: (1) Make sure each battery is within 50mV (0.05V) of each other before putting them in service. This will minimize the chance of imbalance between batteries. If your batteries get out of balance, the voltage of any battery is >50mV (0.05V) from another battery in the set, you should charge each battery individually to rebalance. (2) Size batteries in parallel accordingly: The capacity of batteries (rated in amphours) when connected in parallel is increased by the multiple of the batteries connected (2x, 3x, 4x, etc). However, the current ratings (discharge and charge) for parallel batteries is only increased by 75% of the multiple of the batteries connected (1.5x, 2.25x, 3x, etc). (3) Batteries connected in series are best charged as individual batteries. charging as a series bank can lead to imbalances and reduced runtime, requiring an occasional individual balancing charge. (4) Please reference RELiON's LiFePO4 Charging Instructions document (available on our website at relionbattery.com) for series and parallel charging. **Specifications for Batteries in Parallel** RELIONBATTERY.COM • 855-931-2466 9 https://ceb8596f236225acd007-8e95328c173a04ed694af83ee4e24c15.ssl.cf5.rackcdn.com/user/Legacy-Series-User-Manual_122121.pdf (annotated).

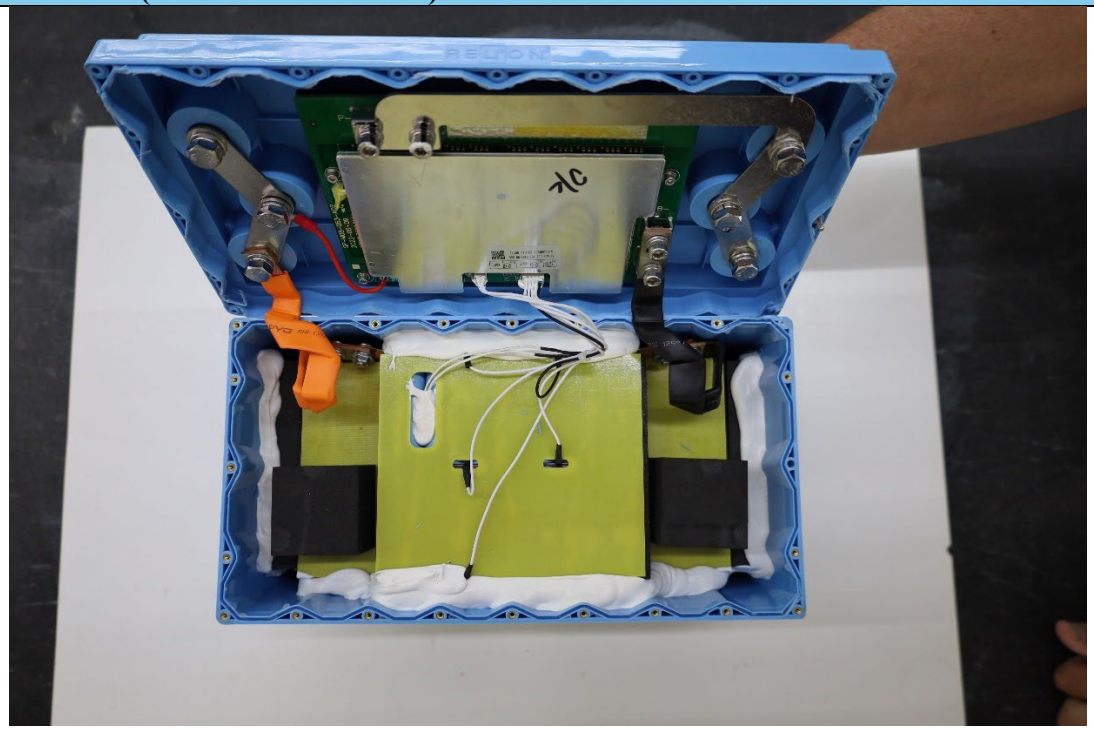
Battery Quantity	v	2	3	4
Voltage	12.8	12.8	12.8	12.8
Capacity (Ah)	100	200	300	400
Max Continuous Discharge Current	100	150	225	300
Peak Discharge Current	200	300	450	600
Rec'd Charge Current	50	75	113	150
Max Charge Current	100	150	225	300

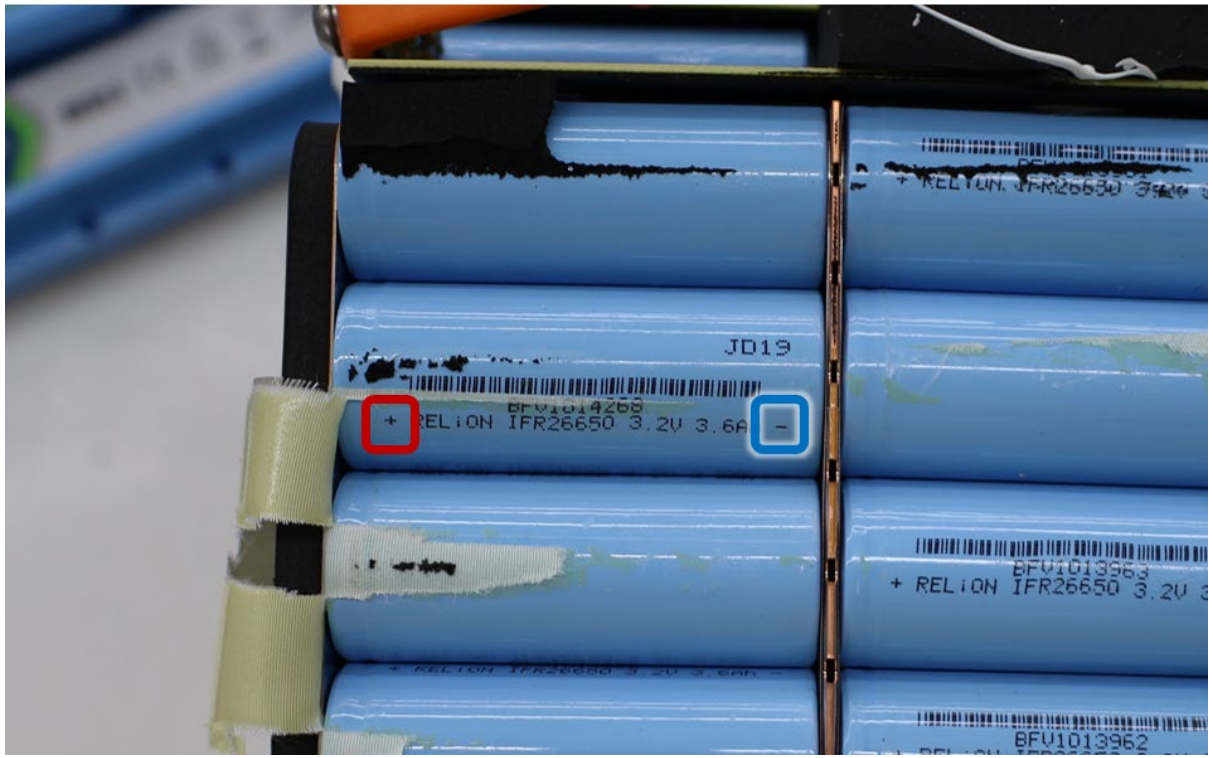
US9,412,994 Claim Element	RELiON (RELiON RB100-HP)

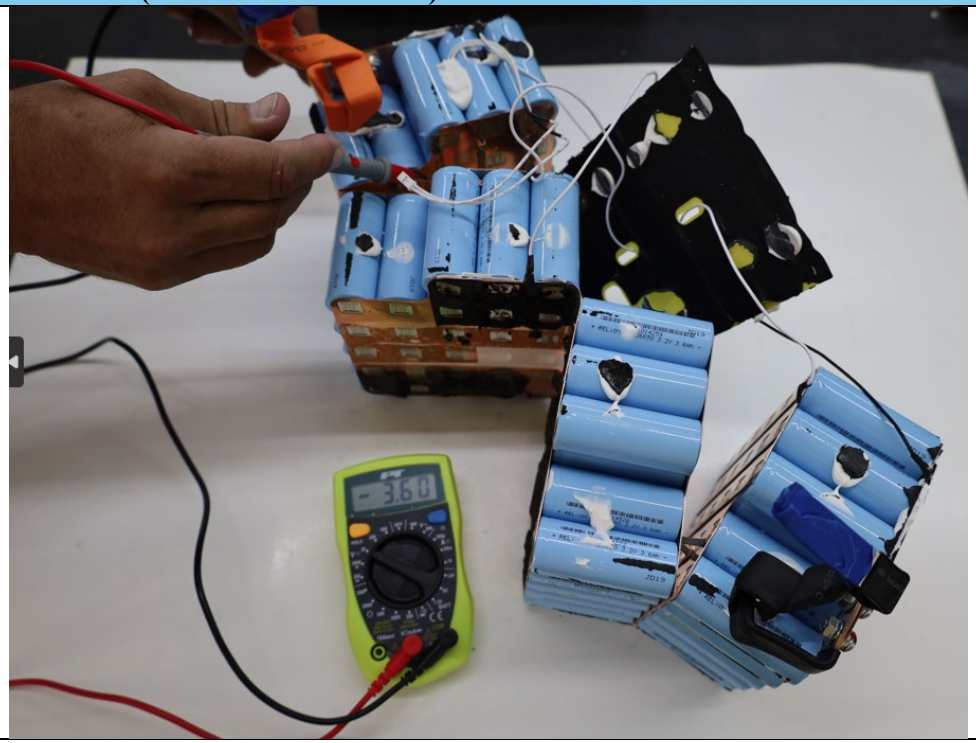
To the extent the preamble is limiting, the RELiON RB100-HP has a positive terminal (10) and a negative terminal (11).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
[1a] a battery pack housing having at least a first portion and a mating second portion;	The RELiON RB100-HP has a battery pack housing (1) with a first portion (1A) and a mating second portion (1B).  
[1b] at least one lithium-based rechargeable cell within said housing, each such cell having a positive pole and a negative pole;	The RELiON RB100-HP comprises at least one lithium-based rechargeable cell within said housing.

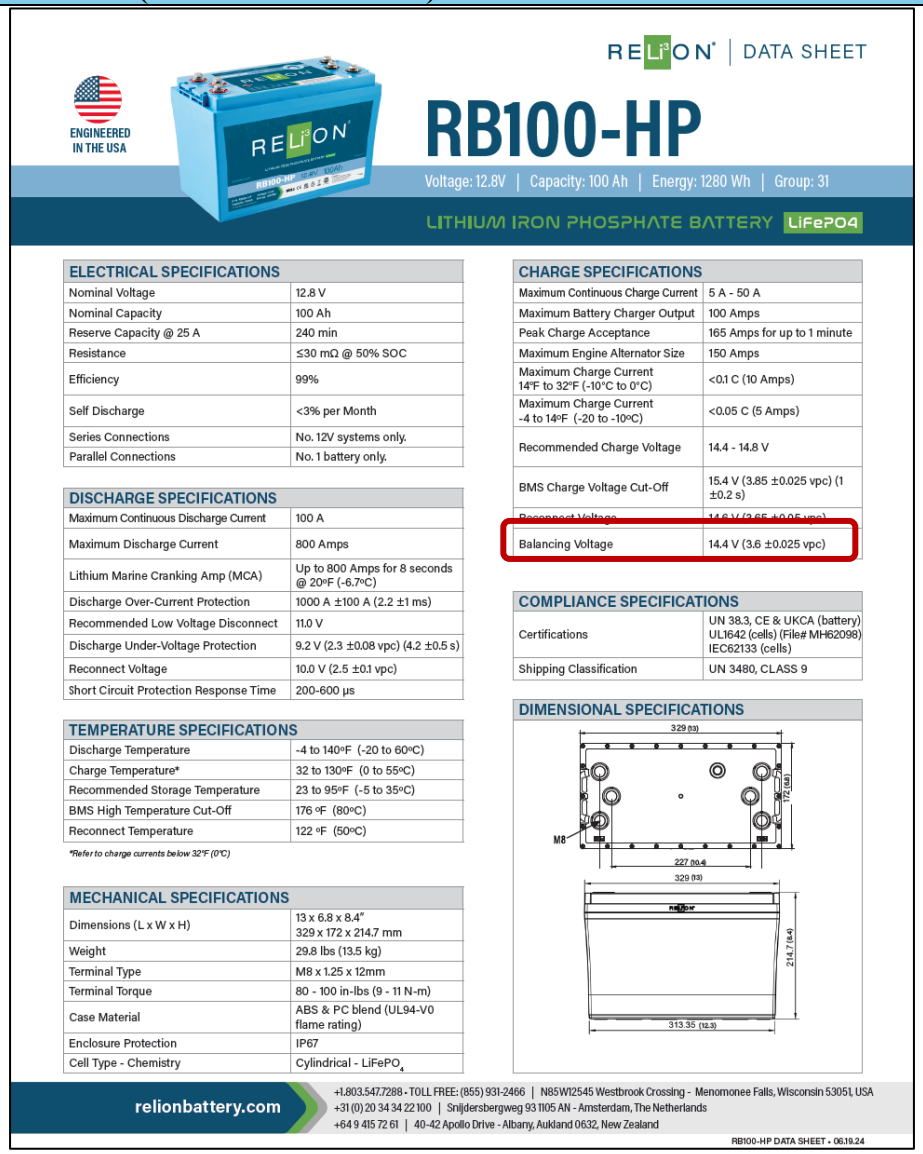
US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	Each such cell of the RELiON RB100-HP has a positive pole and a negative pole.  Additionally, for example, the polarity of each unit in a cell of the RELiON RB100-HP was demonstrated as having a positive pole and a negative pole by using a multimeter to measure a voltage potential across the positive pole and a negative pole of a cell.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	
[1c-i] a circuit board within said housing configured to balance each individual cell within said housing, and having a cutoff function incorporated therein,	The RELiON RB100-HP comprises a circuit board (2) within said housing configured to balance (5) each individual cell within said housing (e.g., 5A-5D).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



RELiON | DATA SHEET

ENGINEERED IN THE USA

RB100-HP

Voltage: 12.8V | Capacity: 100 Ah | Energy: 1280 Wh | Group: 31

LITHIUM IRON PHOSPHATE BATTERY LiFePO4

ELECTRICAL SPECIFICATIONS

Nominal Voltage	12.8 V
Nominal Capacity	100 Ah
Reserve Capacity @ 25 A	240 min
Resistance	≤30 mΩ @ 50% SOC
Efficiency	99%
Self Discharge	<3% per Month
Series Connections	No. 12V systems only.
Parallel Connections	No. 1 battery only.

DISCHARGE SPECIFICATIONS

Maximum Continuous Discharge Current	100 A
Maximum Discharge Current	800 Amps
Lithium Marine Cranking Amp (MCA)	Up to 800 Amps for 8 seconds @ 20ºF (-6.7ºC)
Discharge Over-Current Protection	1000 A ±100 A (2.2 ±1 ms)
Recommended Low Voltage Disconnect	11.0 V
Discharge Under-Voltage Protection	9.2 V (2.3 ±0.08 vpc) (4.2 ±0.5 s)
Reconnect Voltage	10.0 V (2.5 ±0.1 vpc)
Short Circuit Protection Response Time	200-600 µs

TEMPERATURE SPECIFICATIONS

Discharge Temperature	-4 to 140ºF (-20 to 60ºC)
Charge Temperature*	32 to 130ºF (0 to 55ºC)
Recommended Storage Temperature	23 to 95ºF (-5 to 35ºC)
BMS High Temperature Cut-Off	176 ºF (80ºC)
Reconnect Temperature	122 ºF (50ºC)

*Refer to charge currents below 32°F (0°C)

MECHANICAL SPECIFICATIONS

Dimensions (L x W x H)	13 x 6.8 x 8.4" 329 x 172 x 214.7 mm
Weight	29.8 lbs (13.5 kg)
Terminal Type	M8 x 1.25 x 12mm
Terminal Torque	80 - 100 in-lbs (9 - 11 N-m)
Case Material	ABS & PC blend (UL94-V0 flame rating)
Enclosure Protection	IP67
Cell Type - Chemistry	Cylindrical - $LiFePO_4$

CHARGE SPECIFICATIONS

Maximum Continuous Charge Current	5 A - 50 A
Maximum Battery Charger Output	100 Amps
Peak Charge Acceptance	165 Amps for up to 1 minute
Maximum Engine Alternator Size	150 Amps
Maximum Charge Current 14ºF to 32ºF (-10°C to 0°C)	<0.1 C (10 Amps)
Maximum Charge Current -4 to 14ºF (-20 to -10ºC)	<0.05 C (5 Amps)
Recommended Charge Voltage	14.4 - 14.8 V
BMS Charge Voltage Cut-Off	15.4 V (3.85 ±0.025 vpc) (1 ±0.2 s)
Reconnect Voltage	14.6 V (3.65 ±0.025 vpc)
Balancing Voltage	14.4 V (3.6 ±0.025 vpc)

COMPLIANCE SPECIFICATIONS

Certifications	UN 38.3, CE & UKCA (battery) UL1642 (cells) (File# MH62098) IEC62133 (cells)
Shipping Classification	UN 3480, CLASS 9

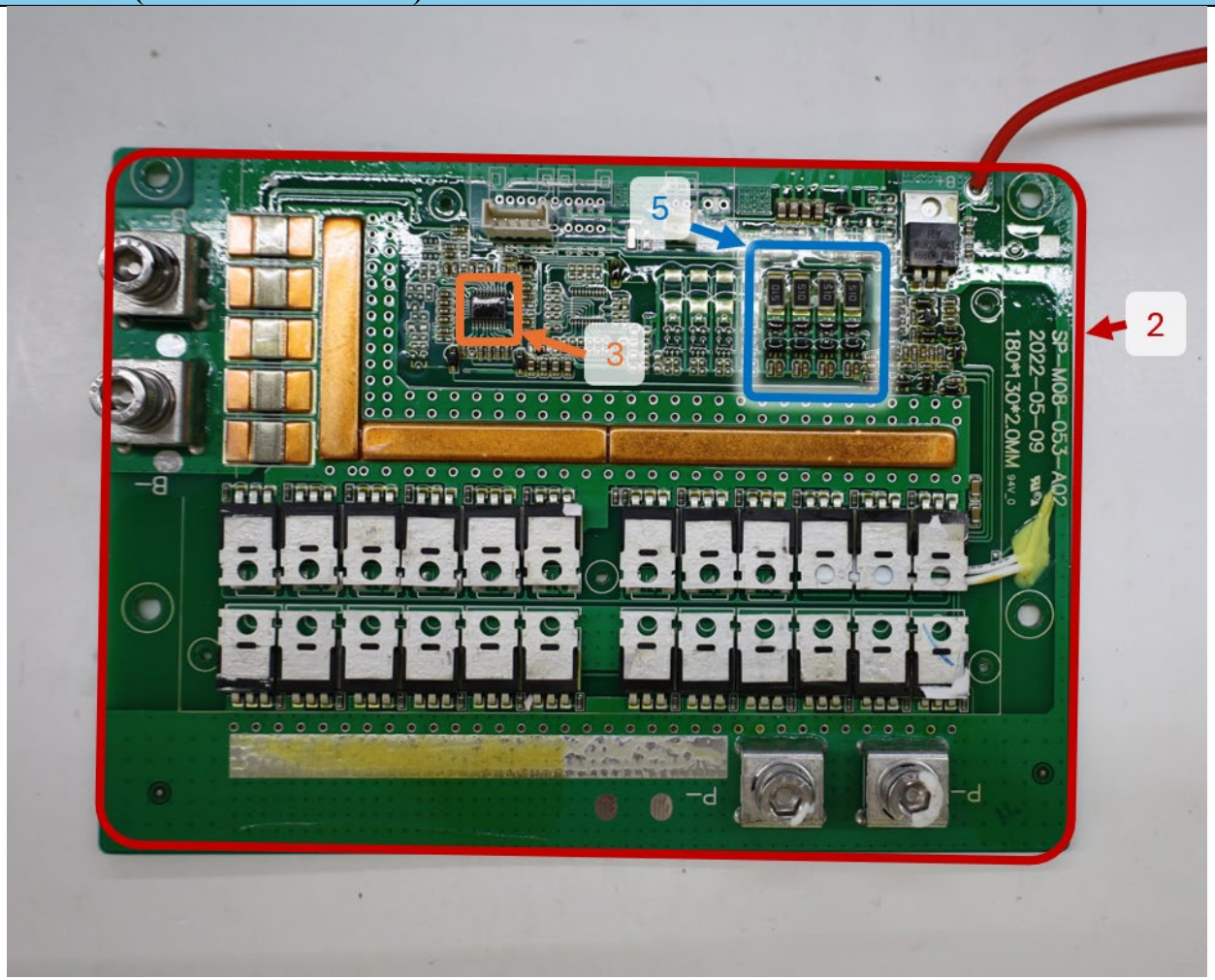
DIMENSIONAL SPECIFICATIONS

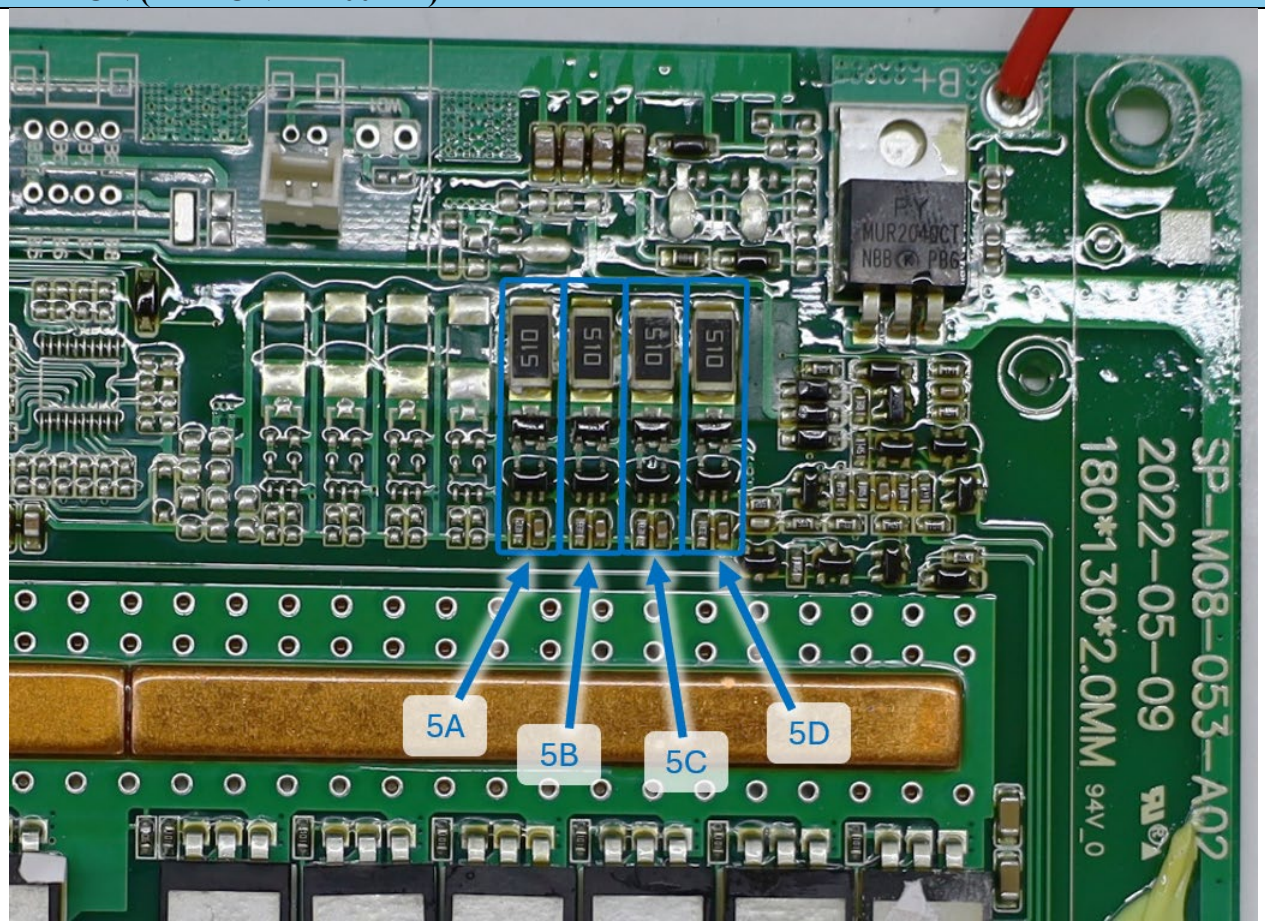
relionbattery.com

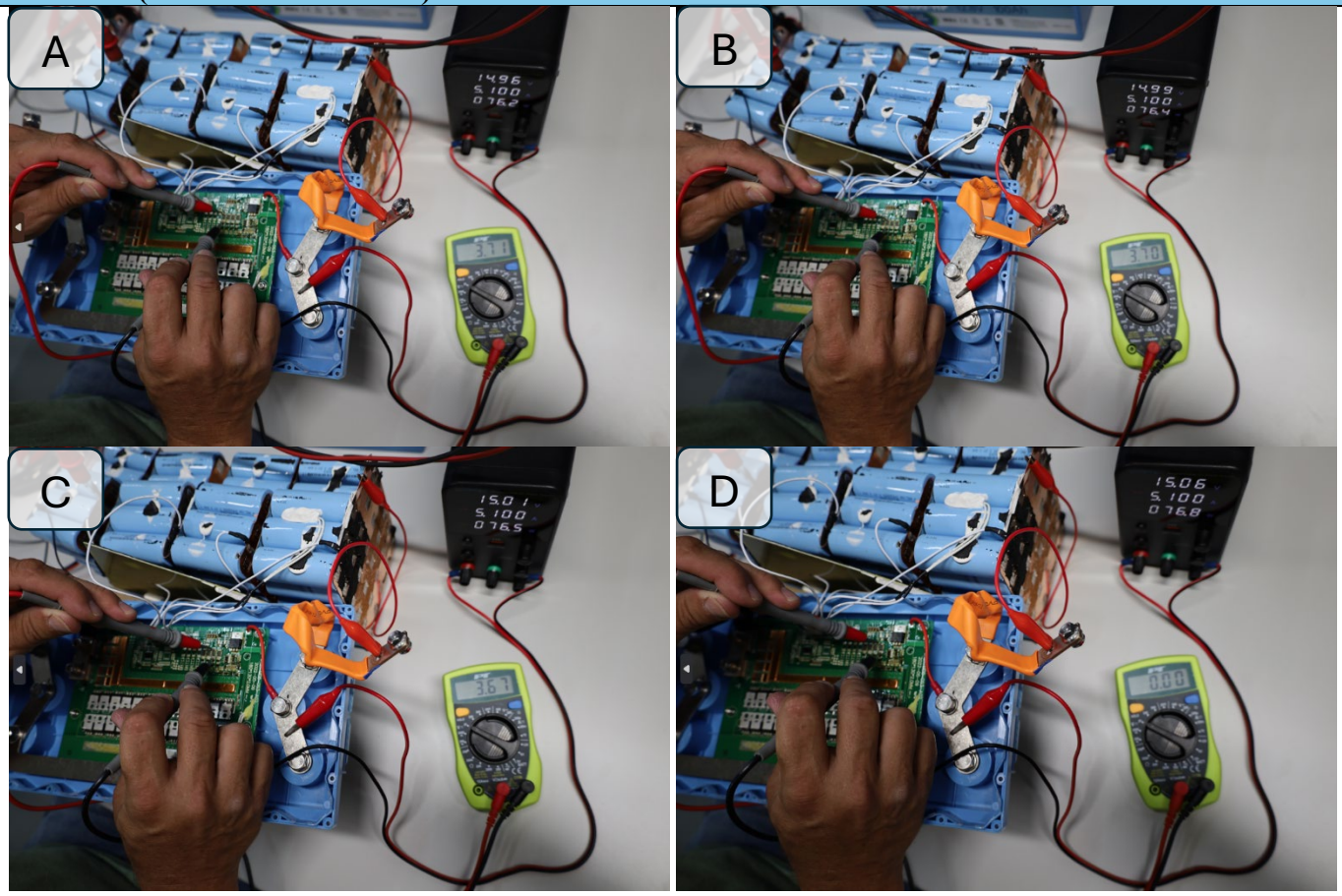
+1.803.547.7288 • TOLL FREE: (855) 931-2466 | N85W12545 Westbrook Crossing - Menomonee Falls, Wisconsin 53051, USA
+31 (0) 20 34 34 22 100 | Snijdersbergweg 93 1105 AN - Amsterdam, The Netherlands
+64 9 415 72 61 | 40-42 Apollo Drive - Albany, Aukland 0632, New Zealand

RB100-HP DATA SHEET • 06.19.24

https://ceb8596f236225acd007-8e95328c173a04ed694af83ee4e24c15.ssl.cf5.rackcdn.com/docs/product/RELiON-Data-Sheet_RB100-HP.pdf (annotated).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 For example, as demonstrated by using a multimeter and testing the voltage across each of the cell balancing circuits 5A-5D when one of the cells were discharged relative to the remaining three cells of the RELiON RB100-HP a voltage across three of the respective balancing circuits was observed (*see* photos A-C below) while the remaining balancing circuits remained inactive (*see* photos D below).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 The RELiON RB100-HP comprises a circuit board having a cutoff function incorporated therein.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)

RELiON | DATA SHEET

ENGINEERED IN THE USA

RB100-HP

Voltage: 12.8V | Capacity: 100 Ah | Energy: 1280 Wh | Group: 31

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Series Connections	No. 12V systems only.
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Maximum Continuous Discharge Current	100 A
Maximum Discharge Current	800 Amps
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*Refer to charge currents below 32°F (0°C)

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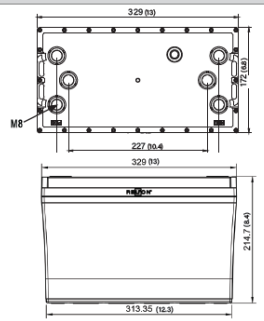

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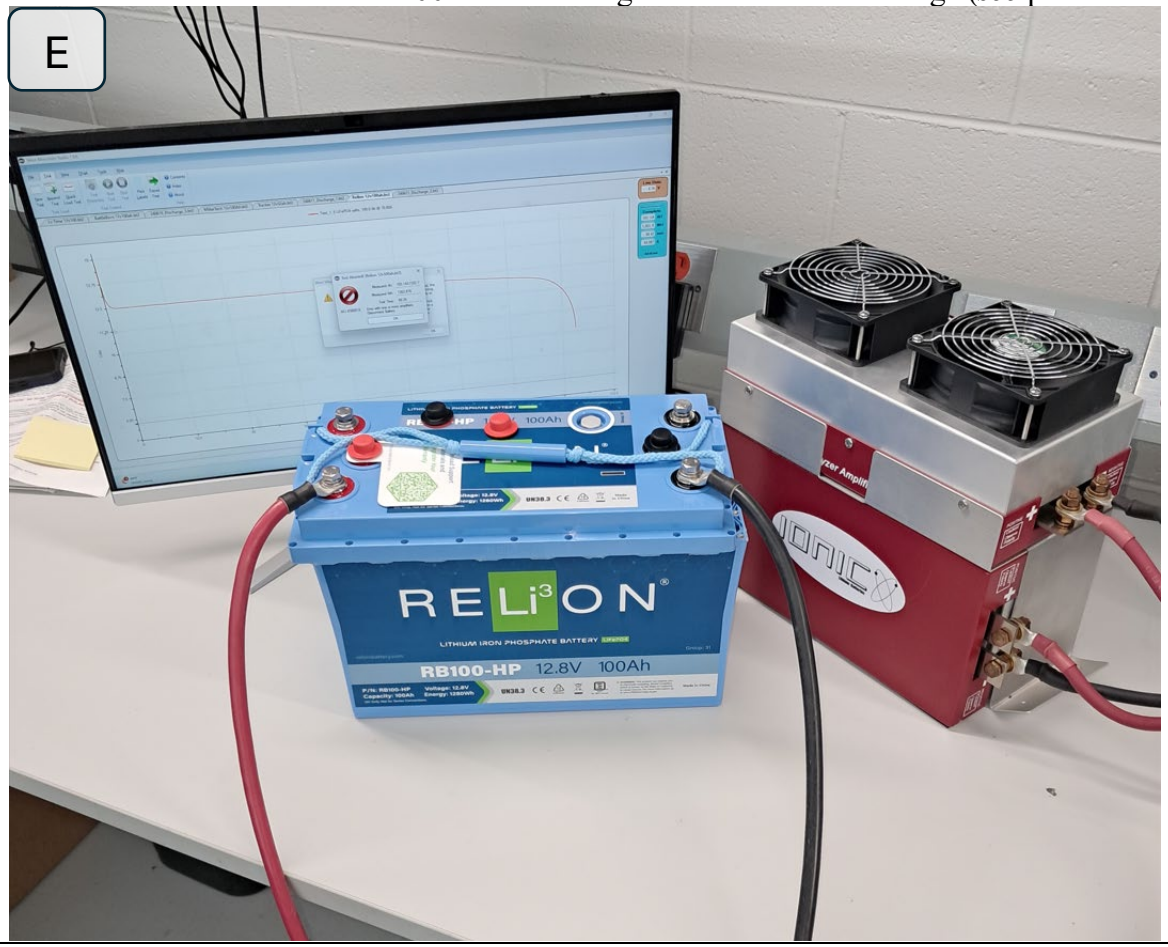
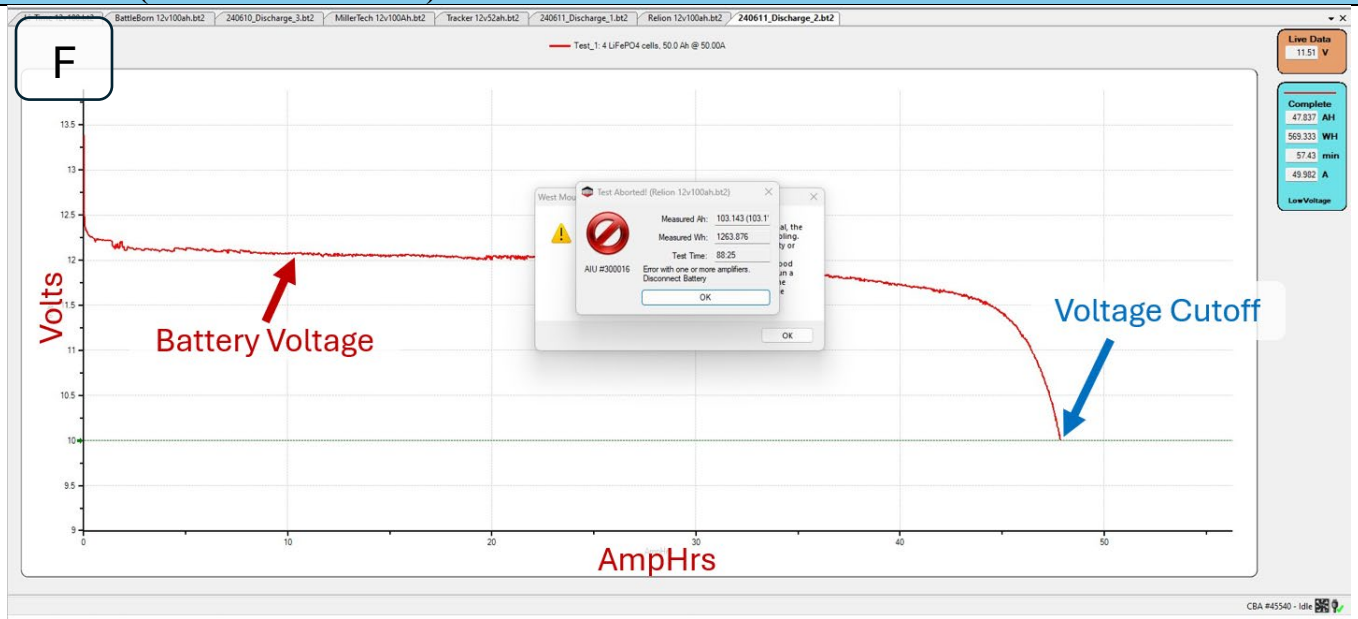
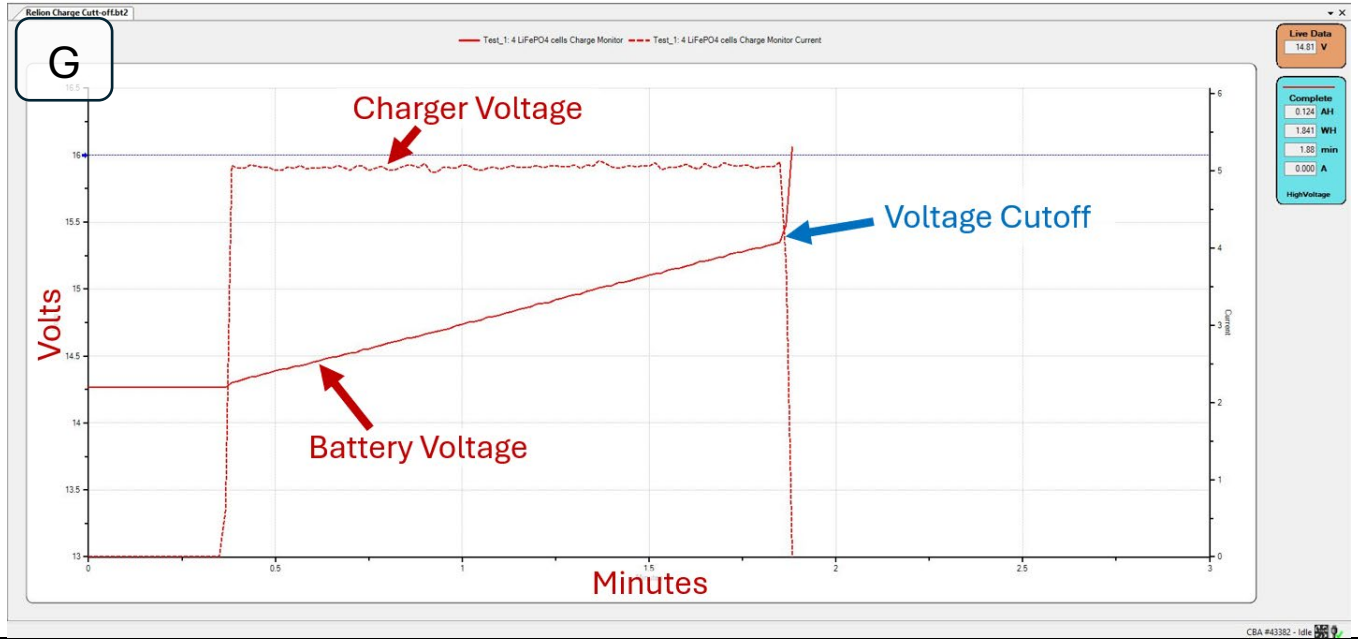
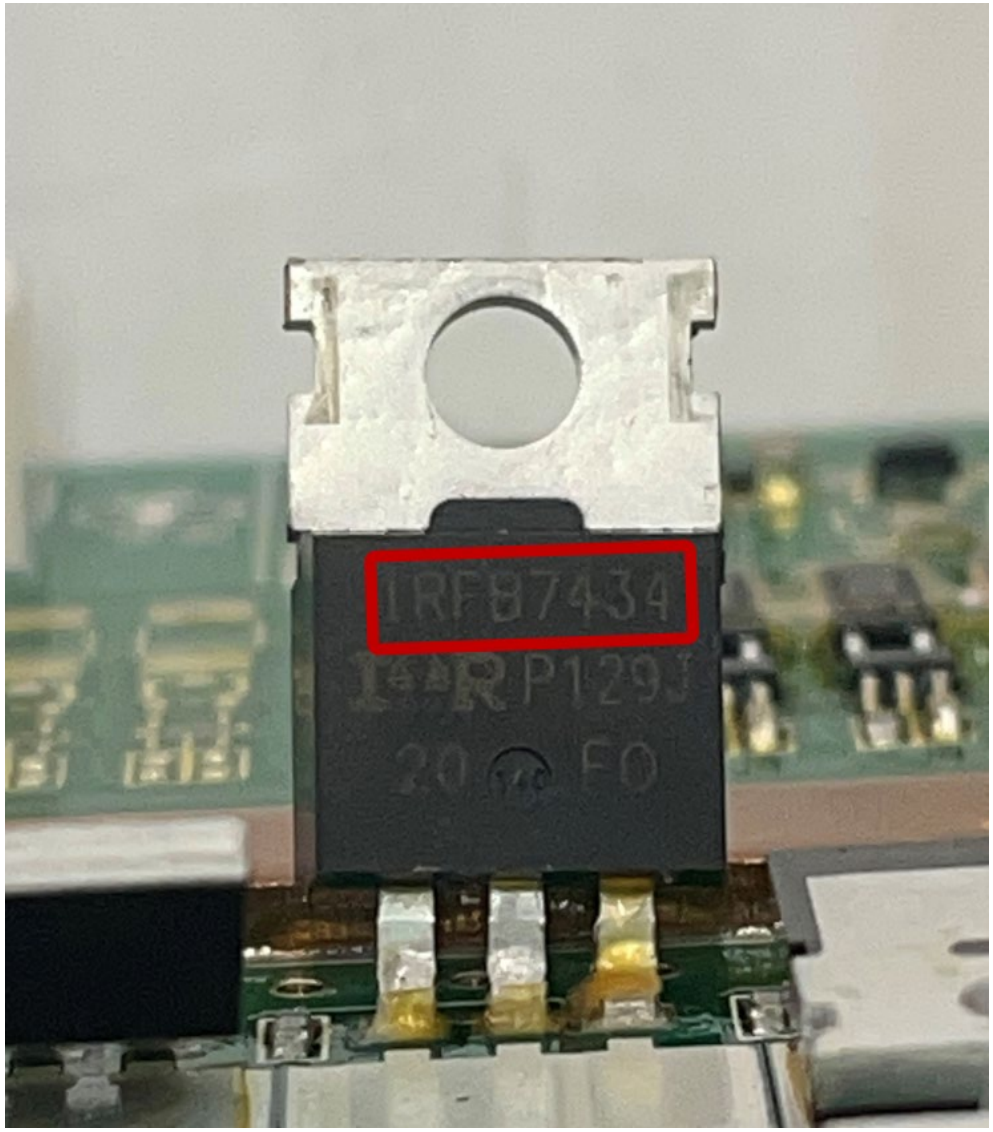
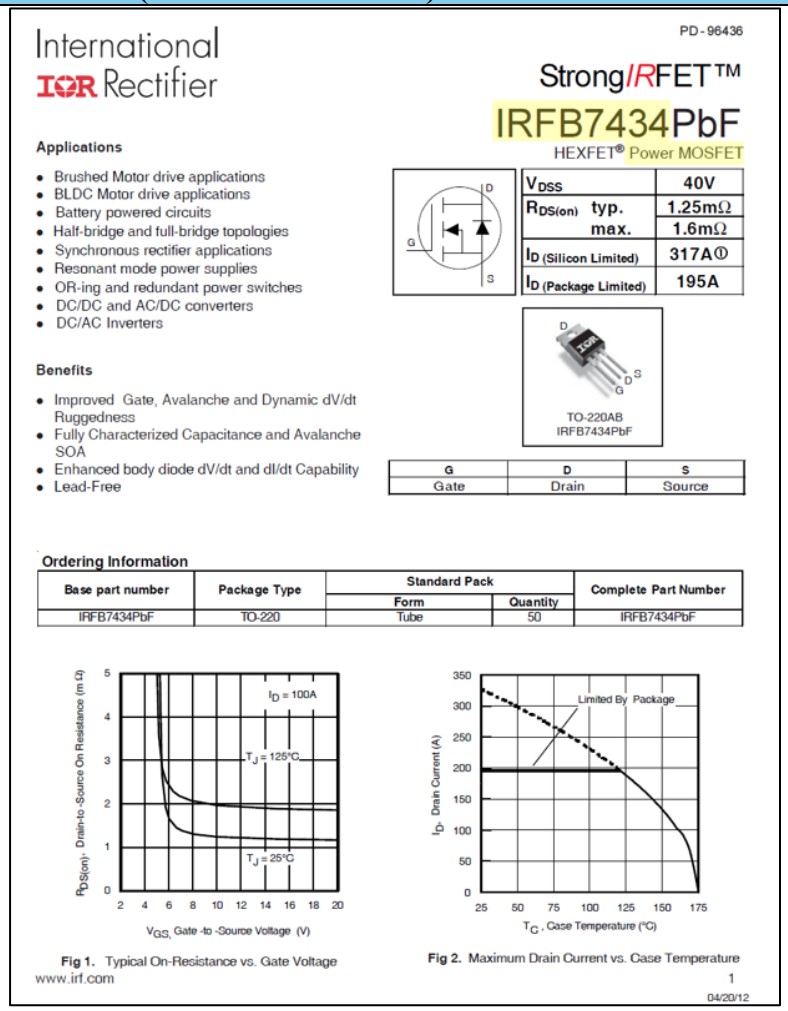
https://ceb8596f236225acd007-8e95328c173a04ed694af83ee4e24c15.ssl.cf5.rackcdn.com/docs/product/RELiON-Data-Sheet_RB100-HP.pdf (annotated).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	For example, as demonstrated by connecting the battery terminals of the RELiON RB100-HP to a computerized battery analyzer (*see* photo E below), the cutoff functionality is demonstrated by the termination of electrical current when the RELiON RB100-HP was discharged below its rated voltage (*see* photo F below). Similarly, the cutoff functionality is also demonstrated by the termination of electrical current when the RELiON RB100-HP was charged above its rated voltage (*see* photo G below). E 

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 
[1c-ii]	The circuit board of the RELiON RB100-HP includes a plurality of pairs of solid state switches.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
said circuit board including a plurality of pairs of solid state switches with each pair of solid state switches connected in a parallel configuration to another pair of solid state switches,	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



International
IOR Rectifier

PD - 96436

StrongIRFET™

IRFB7434PbF

HEXFET® Power MOSFET

Applications

- Brushed Motor drive applications
- BLDC Motor drive applications
- Battery powered circuits
- Half-bridge and full-bridge topologies
- Synchronous rectifier applications
- Resonant mode power supplies
- OR-ing and redundant power switches
- DC/DC and AC/DC converters
- DC/AC Inverters

Benefits

- Improved Gate, Avalanche and Dynamic dV/dt Ruggedness
- Fully Characterized Capacitance and Avalanche SOA
- Enhanced body diode dV/dt and dI/dt Capability
- Lead-Free

V_{DSS}	40V
$R_{DS(on)}$ typ.	1.25mΩ
max.	1.6mΩ
I_D (Silicon Limited)	317A①
I_D (Package Limited)	195A

TO-220AB
IRFB7434PbF

G	D	S
Gate	Drain	Source

Ordering Information

Base part number	Package Type	Standard Pack		Complete Part Number
		Form	Quantity	
IRFB7434PbF	TO-220	Tube	50	IRFB7434PbF

Fig 1. Typical On-Resistance vs. Gate Voltage

Fig 2. Maximum Drain Current vs. Case Temperature

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http://www.irf.ru/pdf/irfb7434pbf.pdf (annotated).

The solid state switches of the RELiON RB100-HP are arranged in pairs (e.g., 4i-4xii) with each pair of solid state switches connected in a parallel configuration to another pair of solid state switches.

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	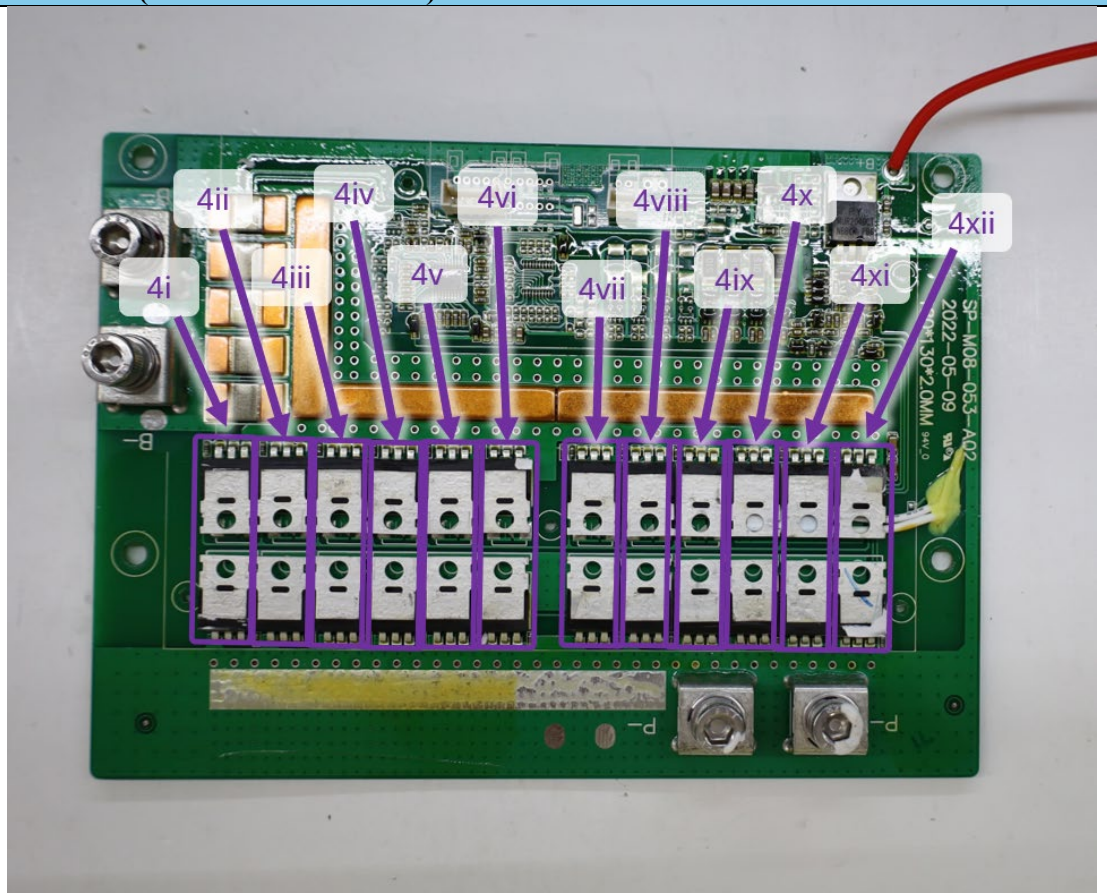

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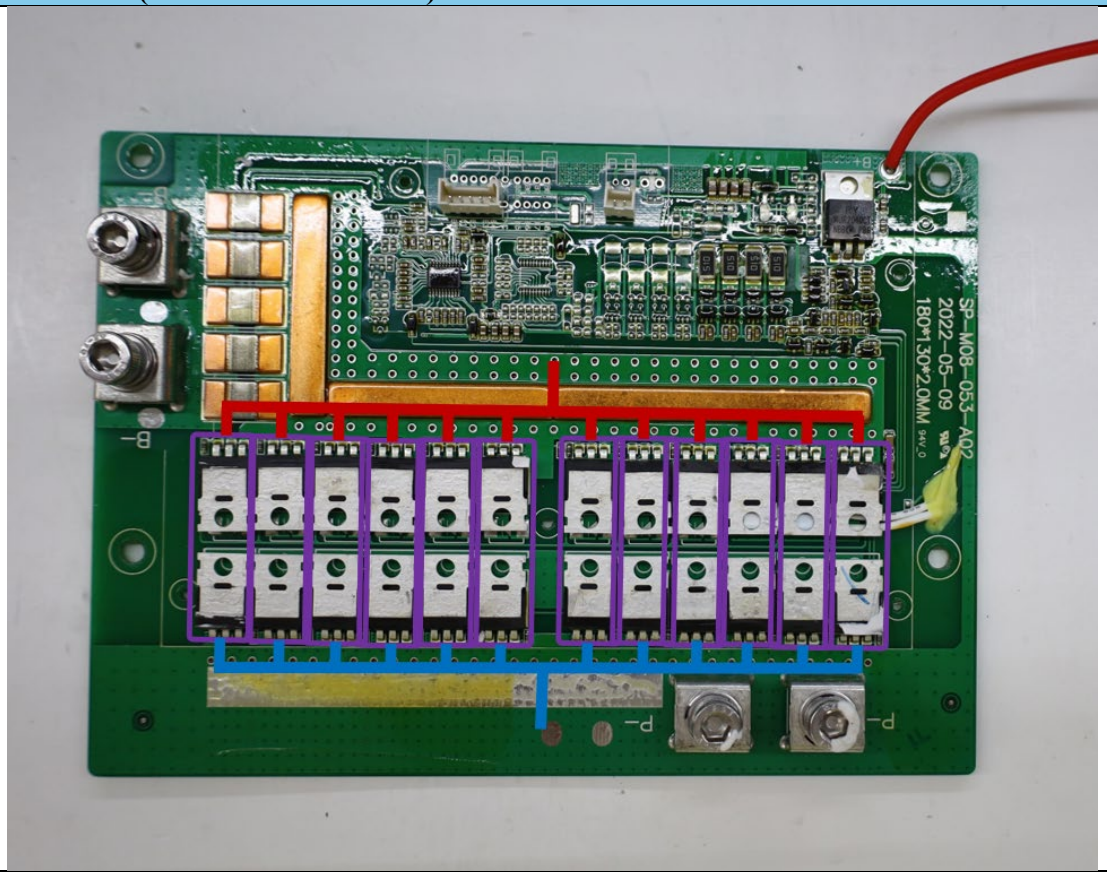
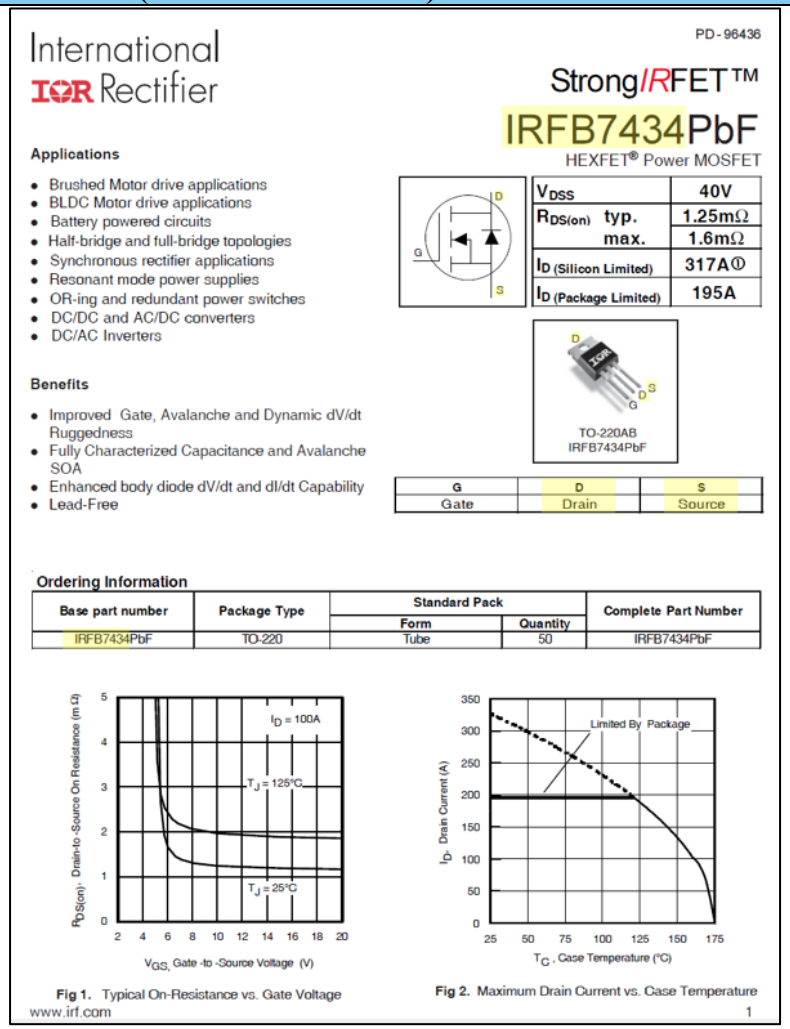
	
[1c-iii] each switch having a source and a drain, the switches of a pair of solid state switches being configured such that either the drains of the switches are connected or the sources of the switches are connected; and	Each switch of the RELiON RB100-HP has a source (i.e., “S”) and a drain (i.e., “D”).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



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$R_{DS(on)}$ typ.	1.25mΩ
max.	1.6mΩ
I_D (Silicon Limited)	317A①
I_D (Package Limited)	195A

TO-220AB
IRFB7434PbF

G	D	S
Gate	Drain	Source

Ordering Information

Base part number	Package Type	Standard Pack		Complete Part Number
		Form	Quantity	
IRFB7434PbF	TO-220	Tube	50	IRFB7434PbF

Fig 1. Typical On-Resistance vs. Gate Voltage

Fig 2. Maximum Drain Current vs. Case Temperature

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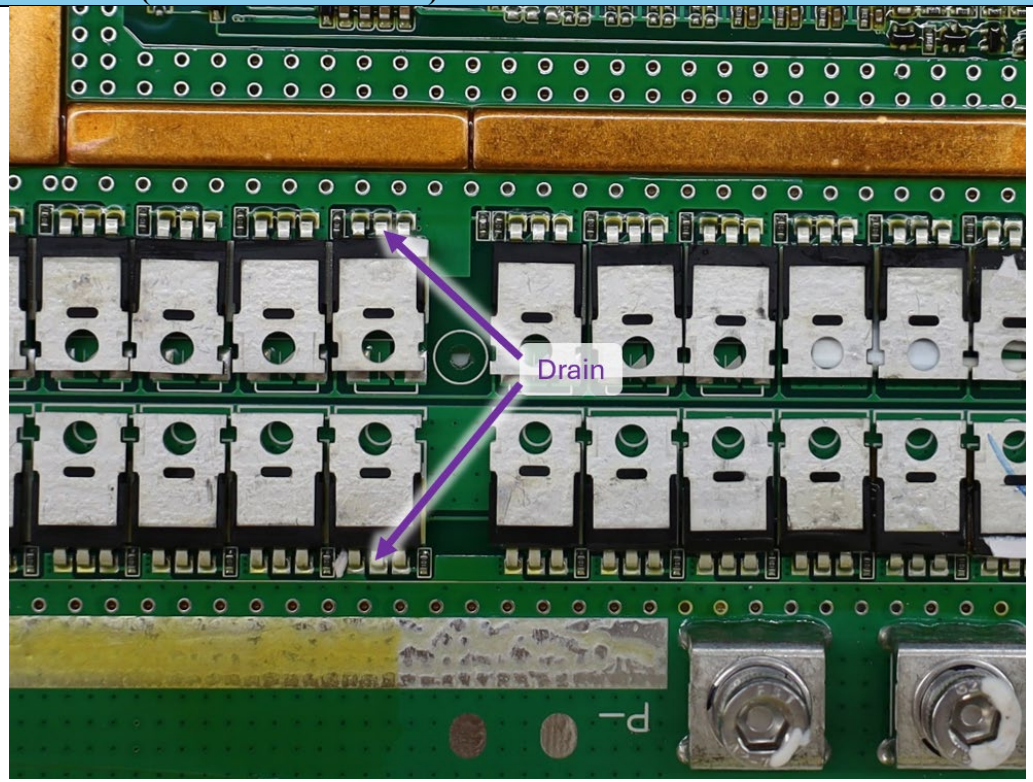
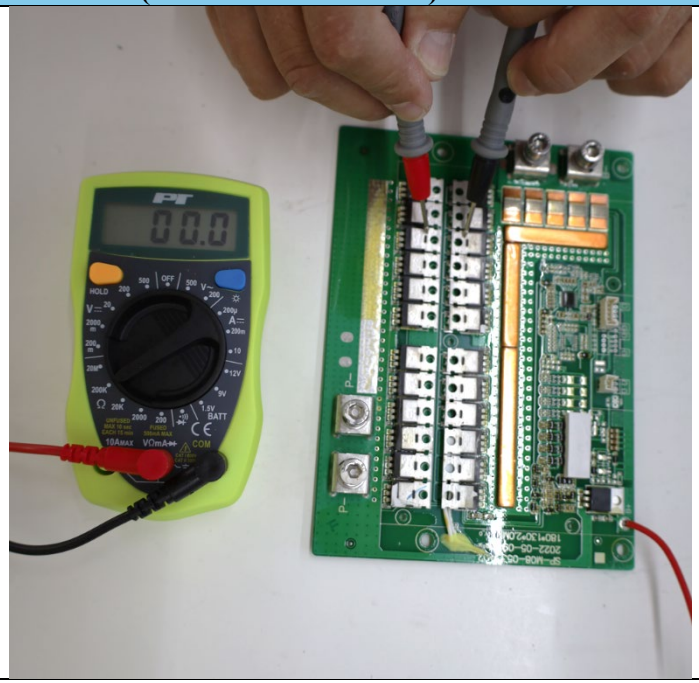
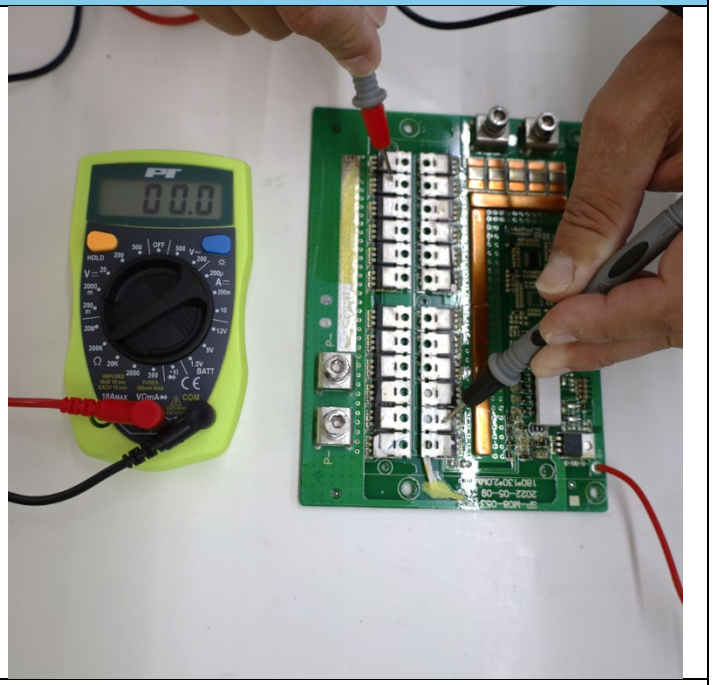
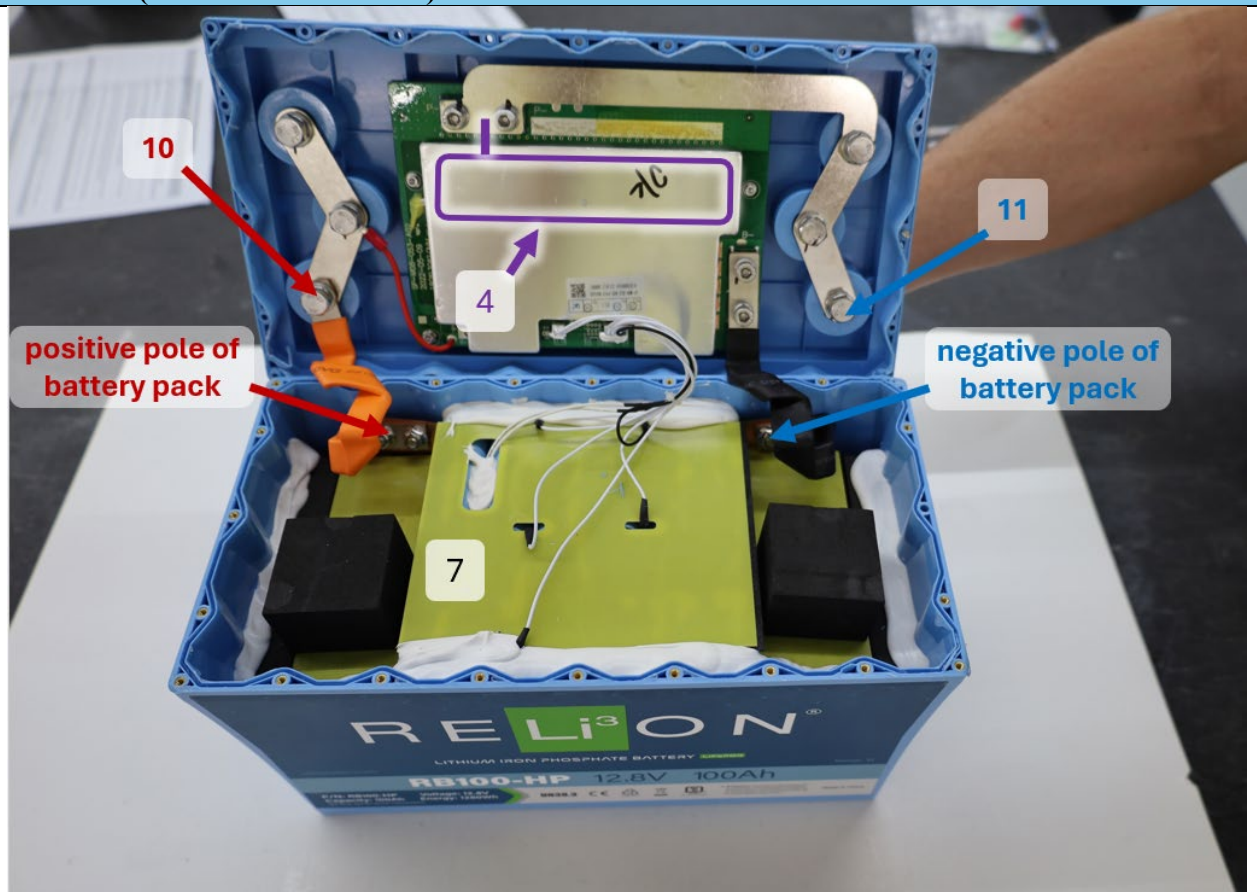
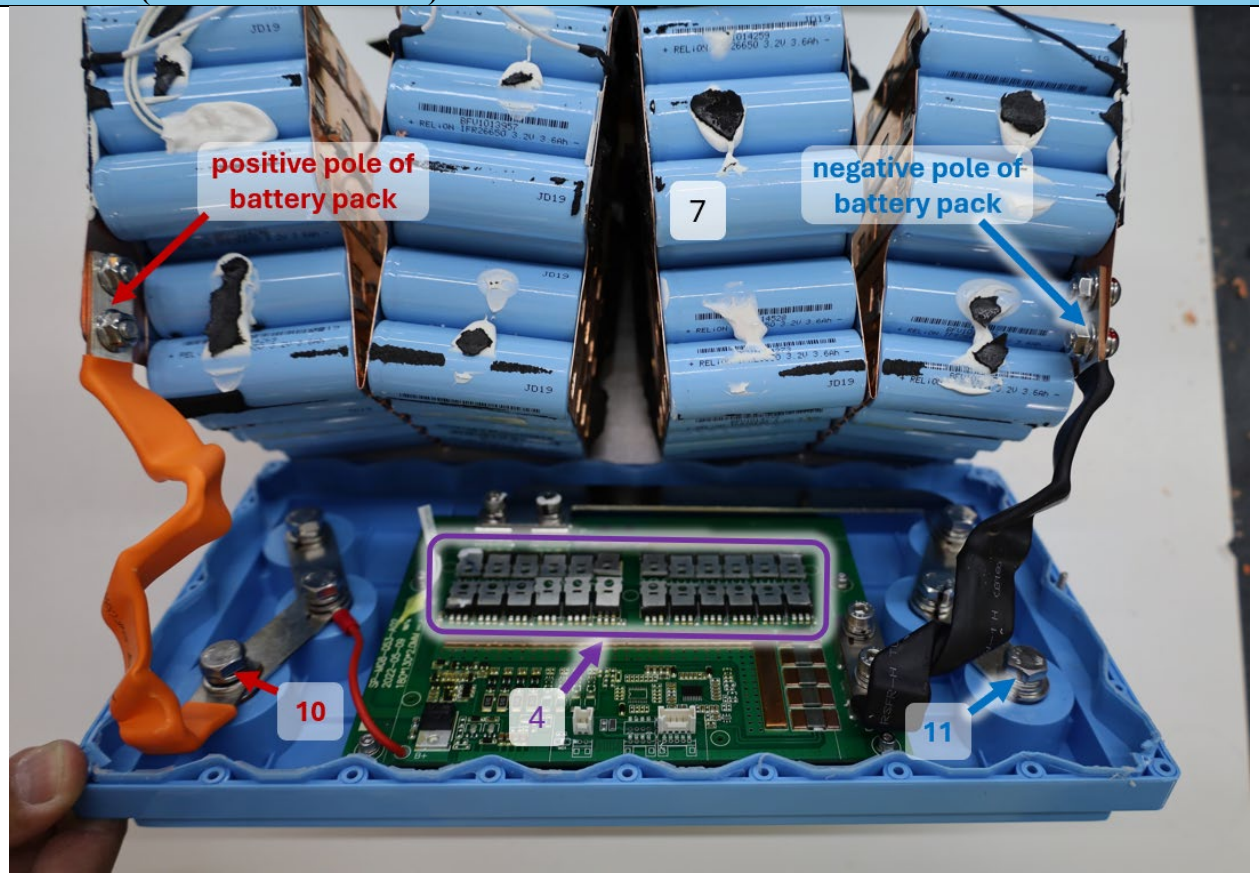
http://www.irf.ru/pdf/irfb7434pbf.pdf (annotated).

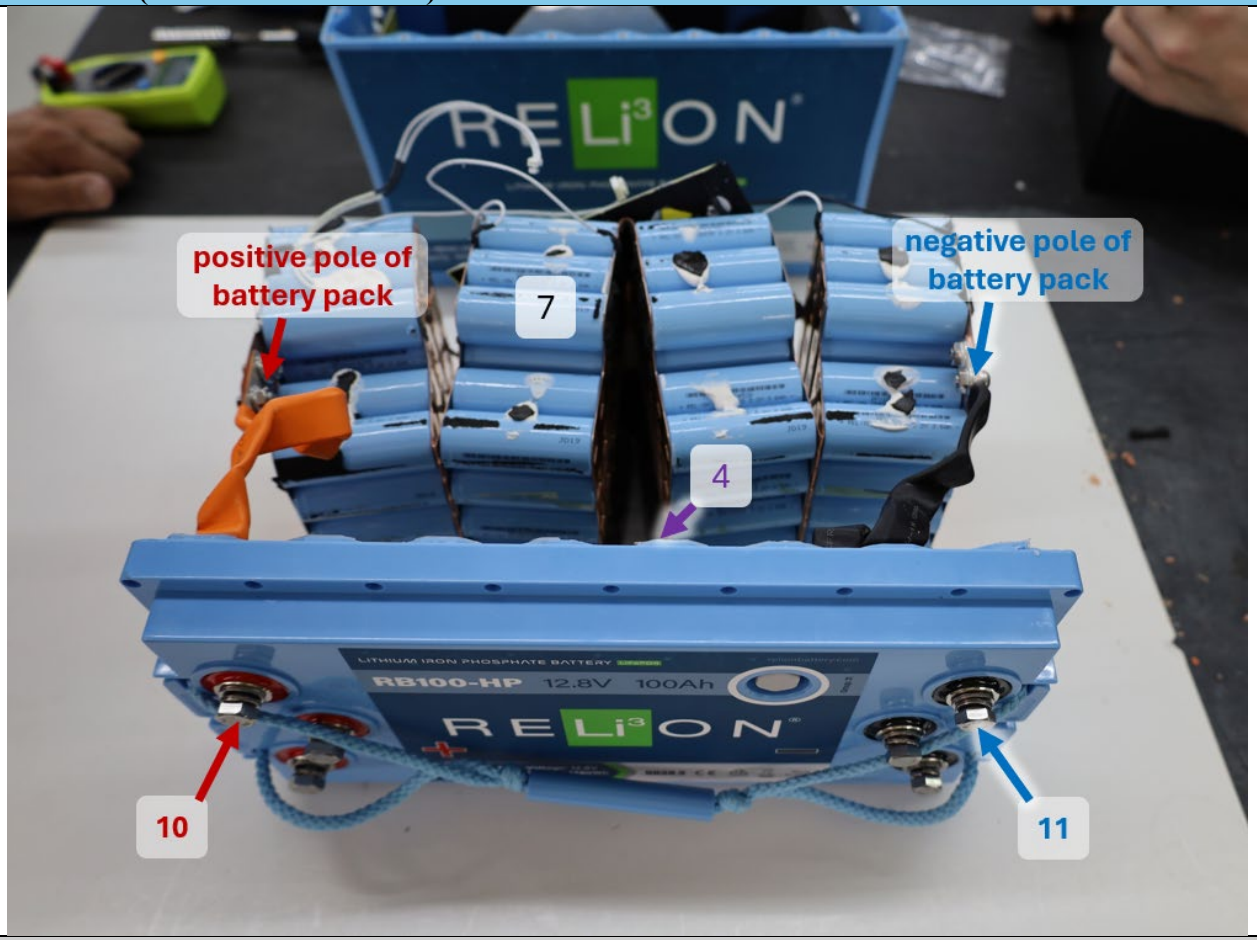
The switches of a pair of solid state switches of the RELiON RB100-HP are configured such that the drains of the switches are connected.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 For example, as demonstrated by testing the electrical continuity using a multimeter, the drains of the switches of the RELiON RB100-HP are connected, as shown by the nominal resistance measured between the drains of opposed MOSFETs.

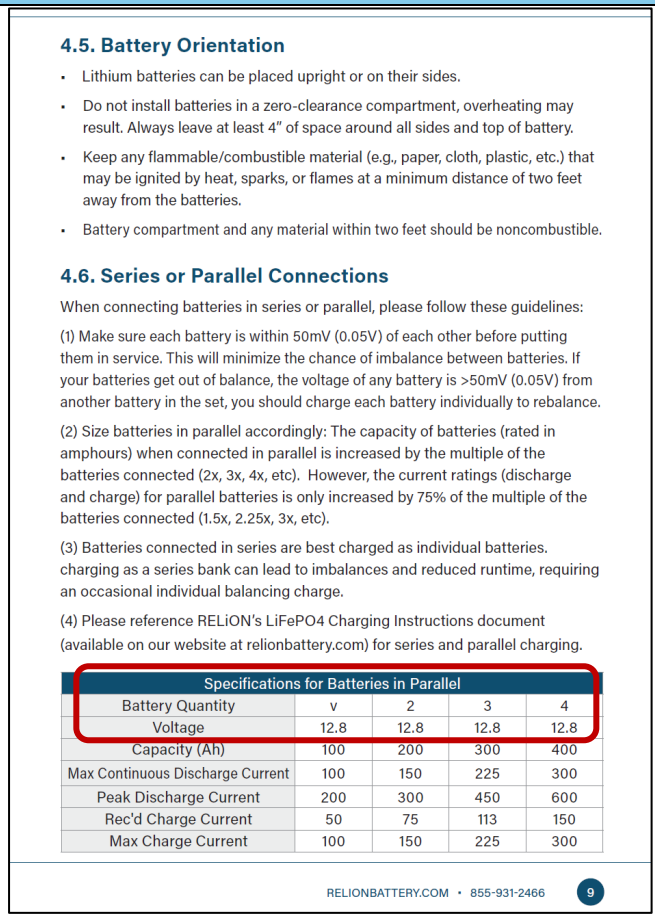
US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 
[1d] said parallel configuration of the plurality of solid state switches being connected in series with said one or more cells between said positive and negative terminals of the battery pack.	The parallel configuration of the plurality of solid state switches (4) of the RELiON RB100-HP are connected in series with the one or more cells (7) between the positive (10) and negative terminals (11) of the battery pack.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	
Claim 14	
[14p] A battery pack for driving an electrical device in a 1 volt to 120 volt operating system, said battery pack comprising:	To the extent the preamble is limiting, the RELiON RB100-HP is a battery pack for driving an electrical device in a 1 volt to 120 volt operating system.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



4.5. Battery Orientation

- Lithium batteries can be placed upright or on their sides.
- Do not install batteries in a zero-clearance compartment, overheating may result. Always leave at least 4" of space around all sides and top of battery.
- Keep any flammable/combustible material (e.g., paper, cloth, plastic, etc.) that may be ignited by heat, sparks, or flames at a minimum distance of two feet away from the batteries.
- Battery compartment and any material within two feet should be noncombustible.

4.6. Series or Parallel Connections

When connecting batteries in series or parallel, please follow these guidelines:

(1) Make sure each battery is within 50mV (0.05V) of each other before putting them in service. This will minimize the chance of imbalance between batteries. If your batteries get out of balance, the voltage of any battery is >50mV (0.05V) from another battery in the set, you should charge each battery individually to rebalance.

(2) Size batteries in parallel accordingly: The capacity of batteries (rated in amphours) when connected in parallel is increased by the multiple of the batteries connected (2x, 3x, 4x, etc). However, the current ratings (discharge and charge) for parallel batteries is only increased by 75% of the multiple of the batteries connected (1.5x, 2.25x, 3x, etc).

(3) Batteries connected in series are best charged as individual batteries. charging as a series bank can lead to imbalances and reduced runtime, requiring an occasional individual balancing charge.

(4) Please reference RELiON's LiFePO4 Charging Instructions document (available on our website at relionbattery.com) for series and parallel charging.

Specifications for Batteries in Parallel				
Battery Quantity	v	2	3	4
Voltage	12.8	12.8	12.8	12.8
Capacity (Ah)	100	200	300	400
Max Continuous Discharge Current	100	150	225	300
Peak Discharge Current	200	300	450	600
Rec'd Charge Current	50	75	113	150
Max Charge Current	100	150	225	300

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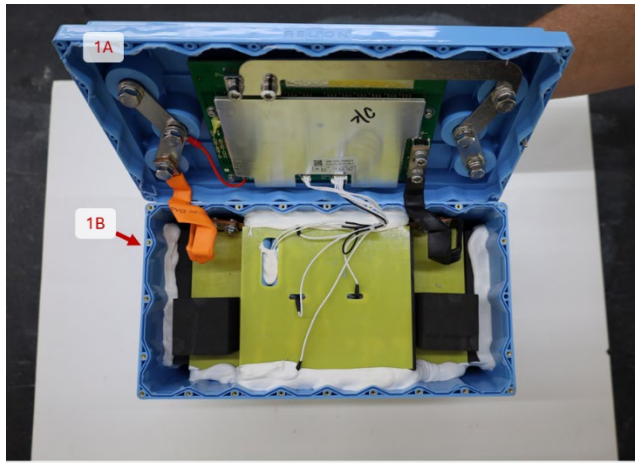
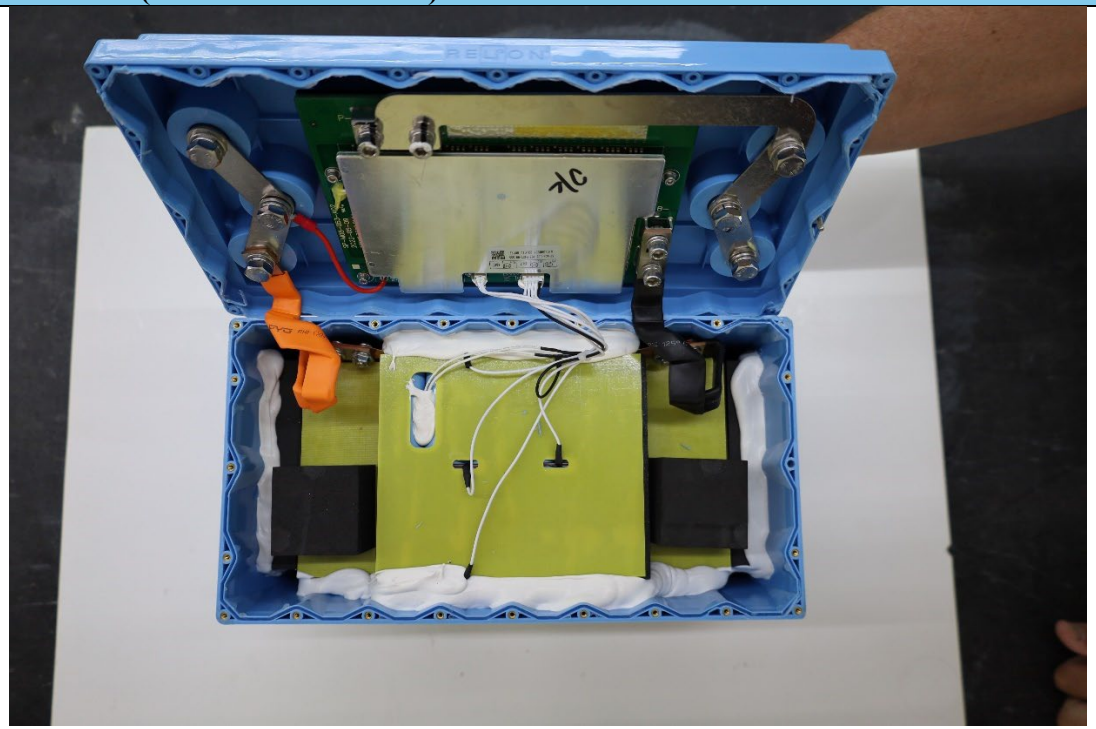
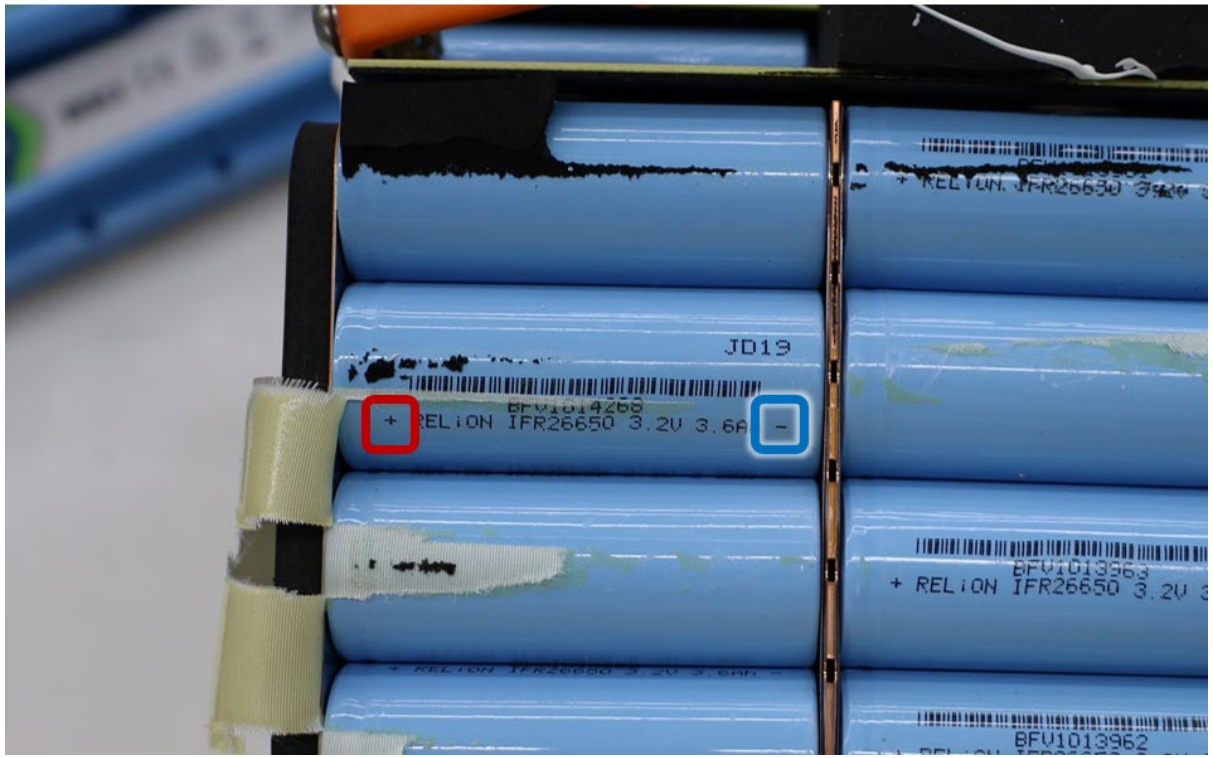
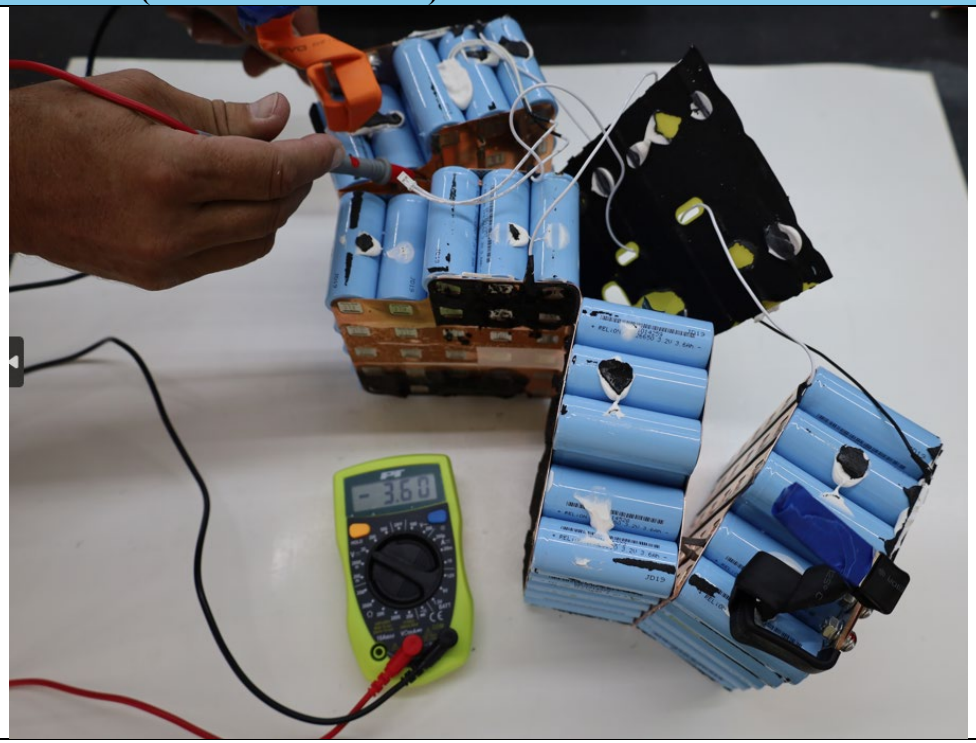
https://ceb8596f236225acd007-8e95328c173a04ed694af83ee4e24c15.ssl.cf5.rackcdn.com/user/Legacy-Series-User-Manual_122121.pdf (annotated).

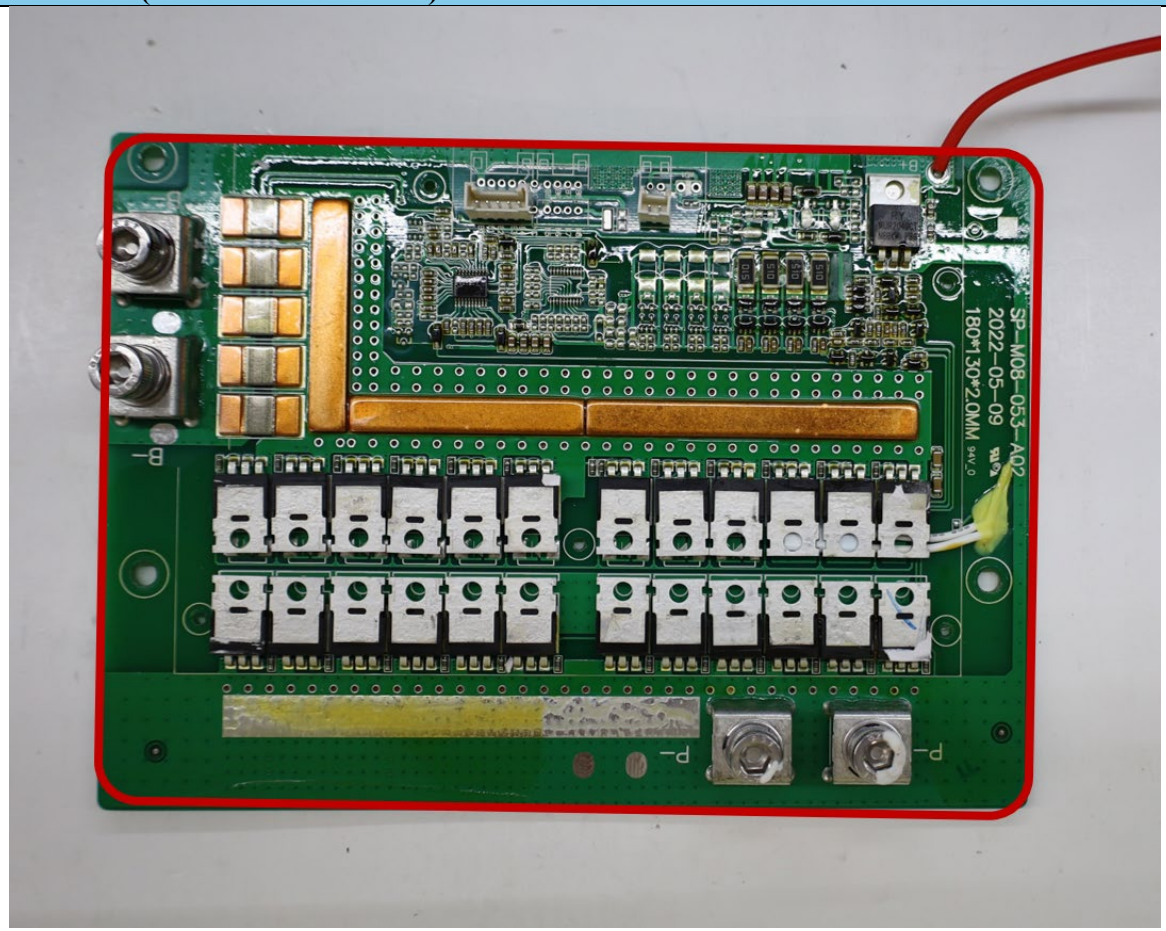
US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 
[14a] a battery pack housing having at least first and second mating portions, said housing having a positive terminal and a negative terminal;	The RELiON RB100-HP includes a battery pack housing (1) having at least first (1A) and second mating portions (1B).   The housing of the RELiON RB100-HP has a positive terminal (10) and a negative terminal (11).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	
[14b] at least one lithium-based rechargeable cell within said housing, said cell having a positive pole and a negative pole;	The RELiON RB100-HP includes at least one lithium-based rechargeable cell within said housing.

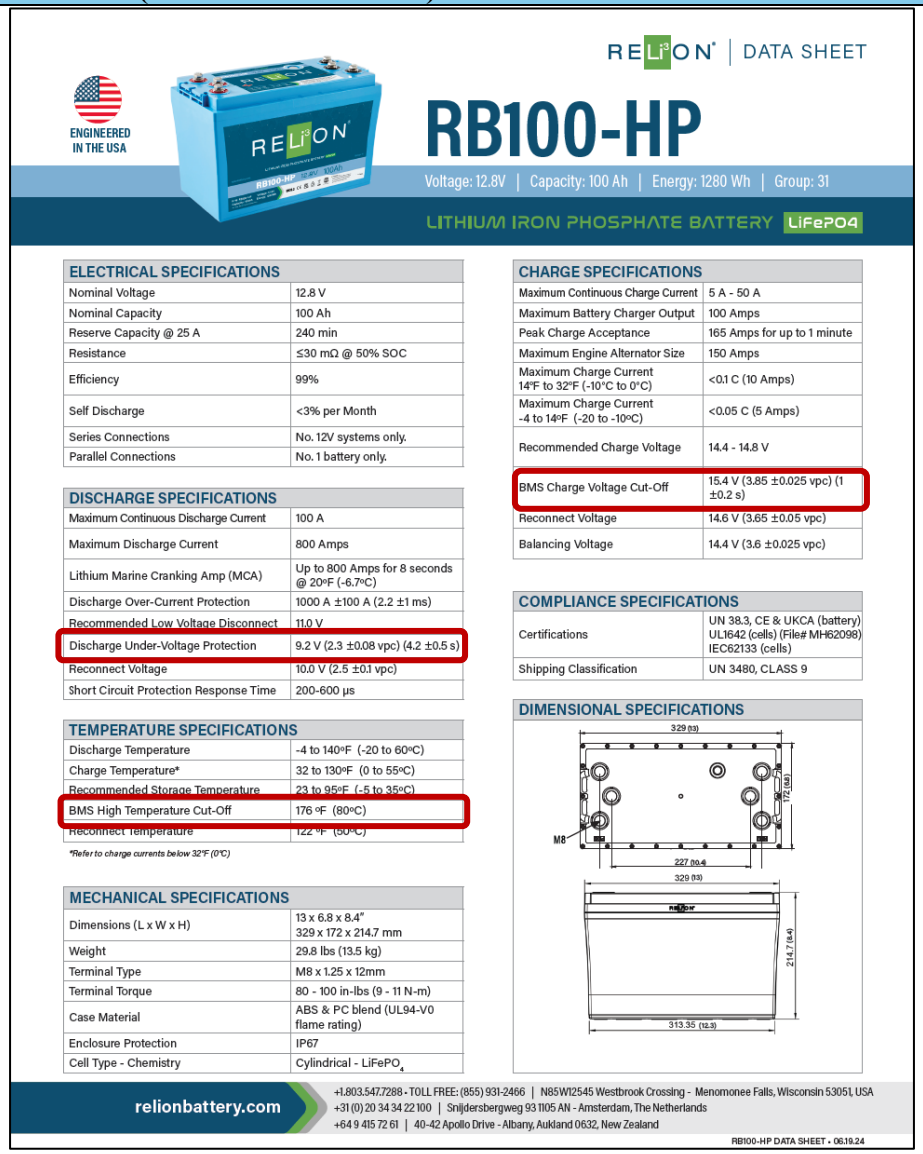
US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	  

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	Each such cell of the RELiON RB100-HP has a positive pole and a negative pole.  Additionally, for example, the polarity of each unit in a cell of the RELiON RB100-HP was demonstrated as having a positive pole and a negative pole by using a multimeter to measure a voltage potential across the positive pole and a negative pole of a cell.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	
[14c-i] a circuit board within said housing having a cutoff function incorporated therein,	The RELiON RB100-HP comprises a circuit board within the housing.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 The RELiON RB100-HP comprises a circuit board having a cutoff function incorporated therein.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



RELiON | DATA SHEET

ENGINEERED IN THE USA

RB100-HP

Voltage: 12.8V | Capacity: 100 Ah | Energy: 1280 Wh | Group: 31

LITHIUM IRON PHOSPHATE BATTERY LiFePO4

ELECTRICAL SPECIFICATIONS

Nominal Voltage	12.8 V
Nominal Capacity	100 Ah
Reserve Capacity @ 25 A	240 min
Resistance	≤30 mΩ @ 50% SOC
Efficiency	99%
Self Discharge	<3% per Month
Series Connections	No. 12V systems only.
Parallel Connections	No. 1 battery only.

DISCHARGE SPECIFICATIONS

Maximum Continuous Discharge Current	100 A
Maximum Discharge Current	800 Amps
Lithium Marine Cranking Amp (MCA)	Up to 800 Amps for 8 seconds @ 20ºF (-6.7ºC)
Discharge Over-Current Protection	1000 A ±100 A (2.2 ±1 ms)
Recommended Low Voltage Disconnect	11.0 V
Discharge Under-Voltage Protection	9.2 V (2.3 ±0.08 vpc) (4.2 ±0.5 s)
Reconnect Voltage	10.0 V (2.5 ±0.1 vpc)
Short Circuit Protection Response Time	200-600 µs

TEMPERATURE SPECIFICATIONS

Discharge Temperature	-4 to 140ºF (-20 to 60ºC)
Charge Temperature*	32 to 130ºF (0 to 55ºC)
Recommended Storage Temperature	23 to 95ºF (-5 to 35ºC)
BMS High Temperature Cut-Off	176 ºF (80ºC)
Reconnect Temperature	122 ºF (50ºC)

*Refer to charge currents below 32°F (0°C)

MECHANICAL SPECIFICATIONS

Dimensions (L x W x H)	13 x 6.8 x 8.4" 329 x 172 x 214.7 mm
Weight	29.8 lbs (13.5 kg)
Terminal Type	M8 x 1.25 x 12mm
Terminal Torque	80 - 100 in-lbs (9 - 11 N-m)
Case Material	ABS & PC blend (UL94-V0 flame rating)
Enclosure Protection	IP67
Cell Type - Chemistry	Cylindrical - $LiFePO_4$

CHARGE SPECIFICATIONS

Maximum Continuous Charge Current	5 A - 50 A
Maximum Battery Charger Output	100 Amps
Peak Charge Acceptance	165 Amps for up to 1 minute
Maximum Engine Alternator Size	150 Amps
Maximum Charge Current 14ºF to 32ºF (-10°C to 0°C)	<0.1 C (10 Amps)
Maximum Charge Current -4 to 14ºF (-20 to -10ºC)	<0.05 C (5 Amps)
Recommended Charge Voltage	14.4 - 14.8 V
BMS Charge Voltage Cut-Off	15.4 V (3.85 ±0.025 vpc) (1 ±0.2 s)
Reconnect Voltage	14.6 V (3.65 ±0.05 vpc)
Balancing Voltage	14.4 V (3.6 ±0.025 vpc)

COMPLIANCE SPECIFICATIONS

Certifications	UN 38.3, CE & UKCA (battery) UL1642 (cells) (File# MH62098) IEC62133 (cells)
Shipping Classification	UN 3480, CLASS 9

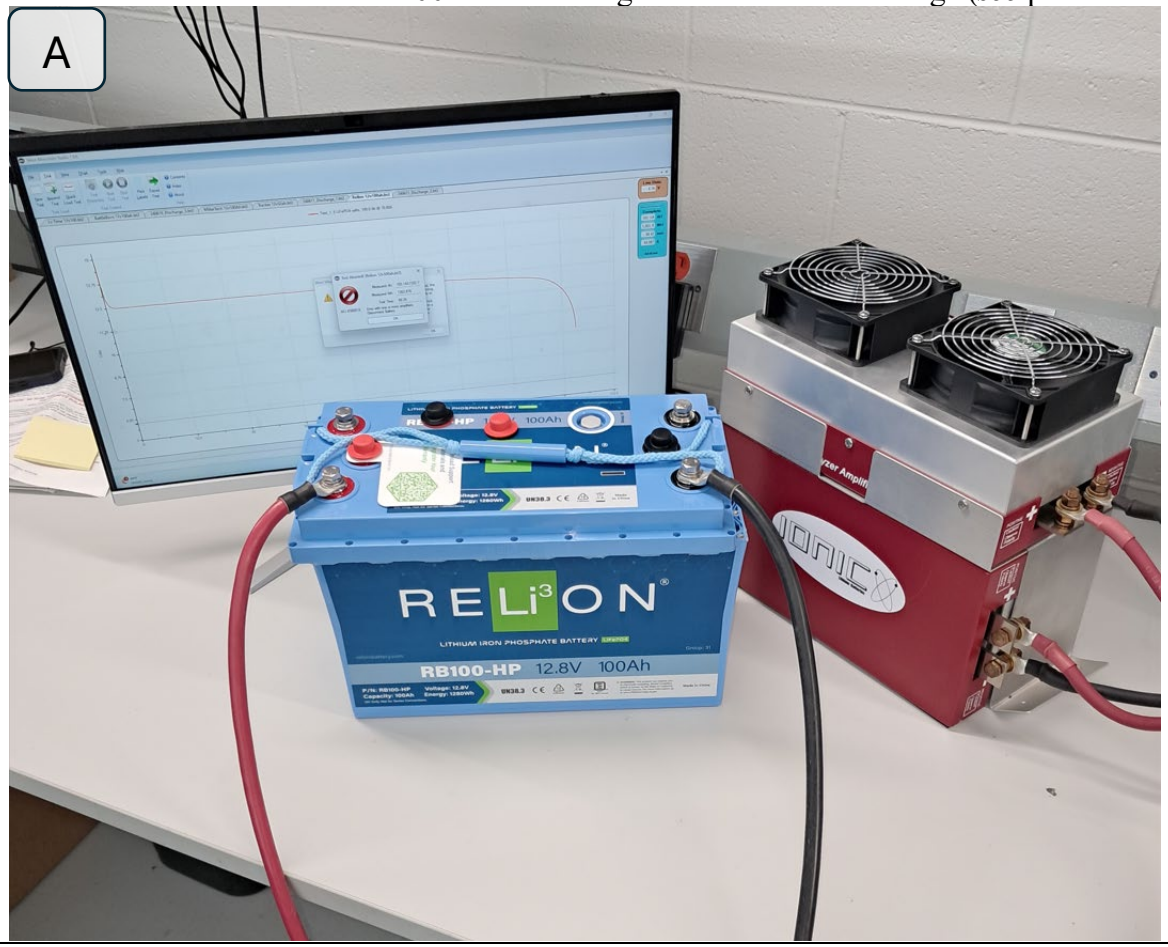
DIMENSIONAL SPECIFICATIONS

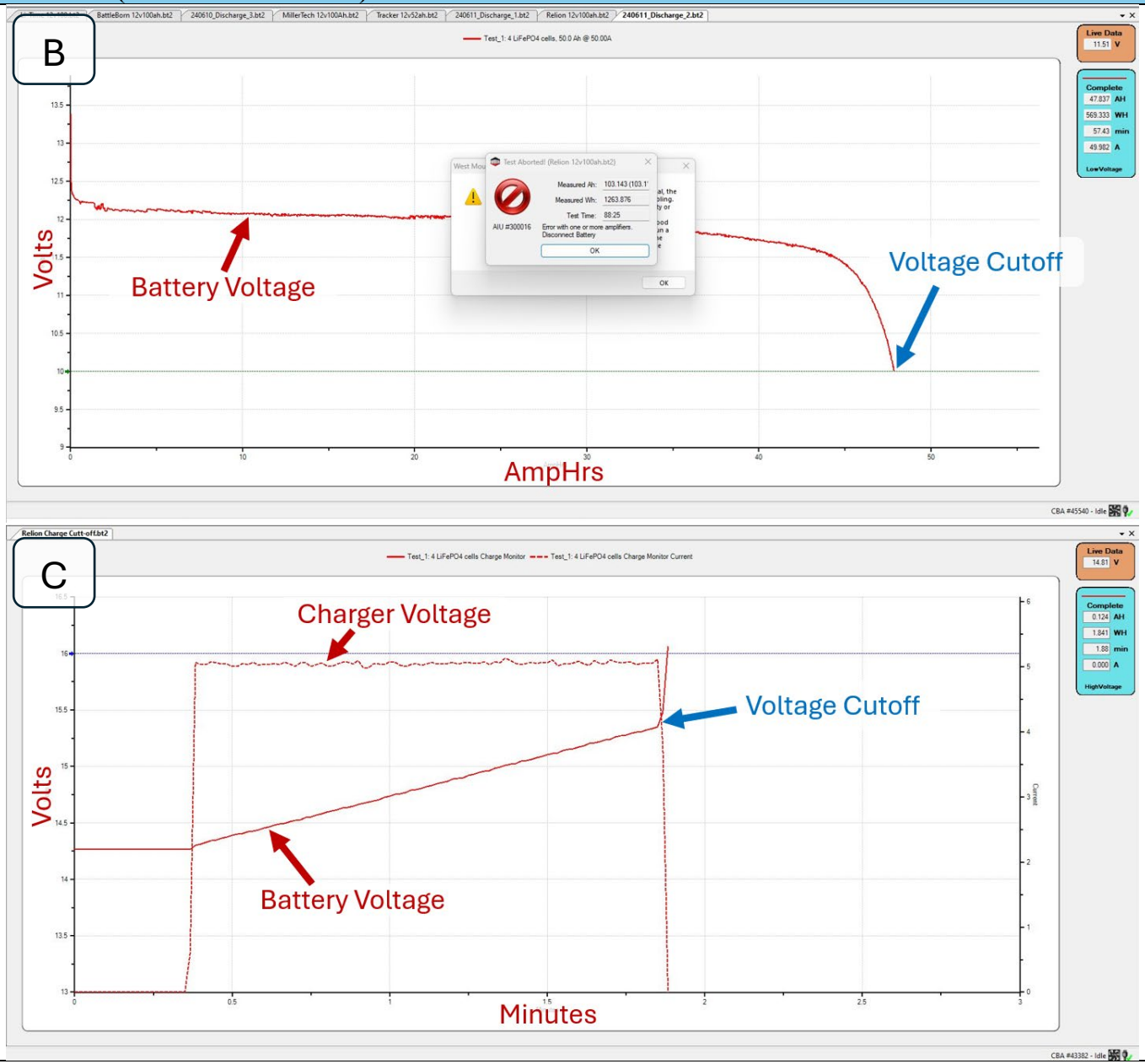
relionbattery.com

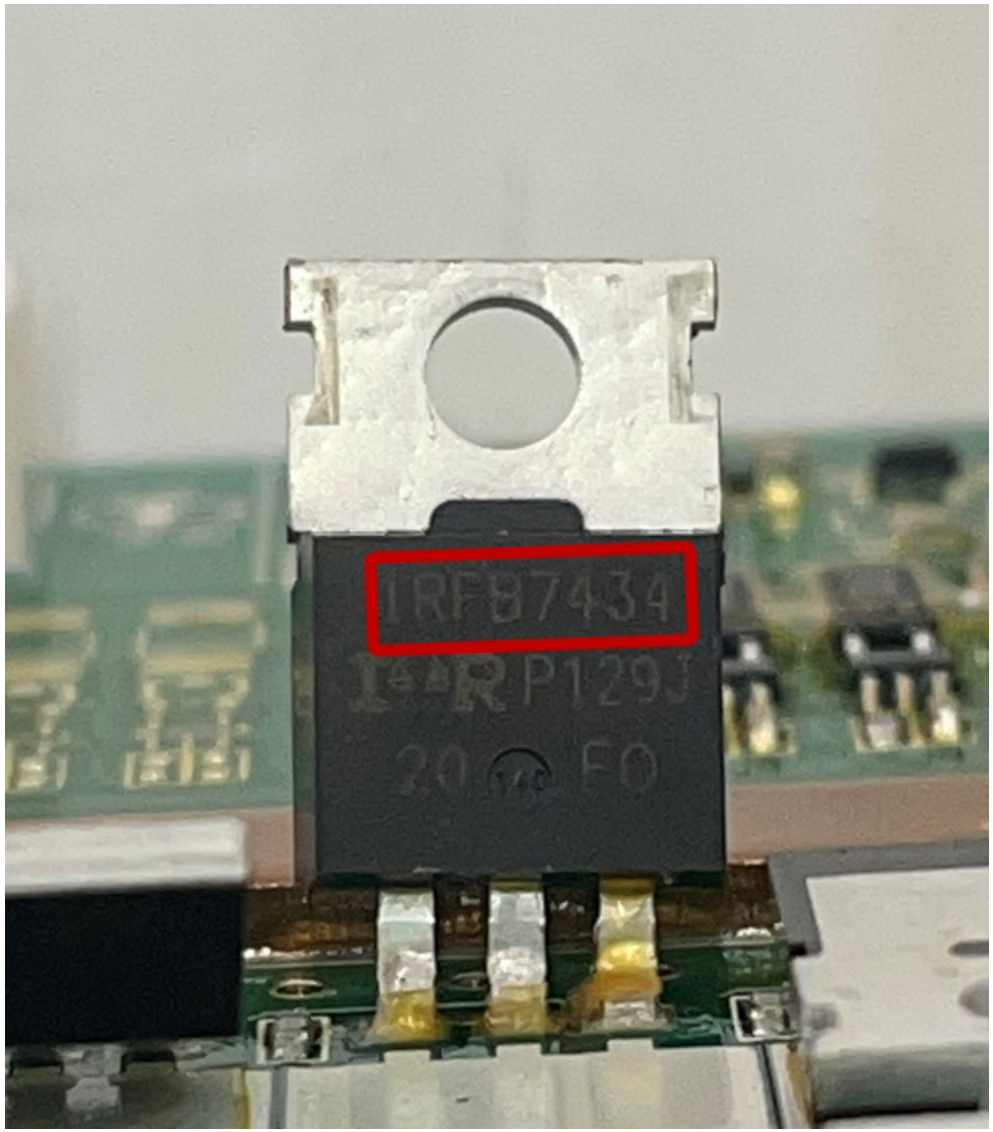
+1.803.547.7288 • TOLL FREE: (855) 931-2466 | N85W12545 Westbrook Crossing - Menomonee Falls, Wisconsin 53051, USA
+31 (0) 20 34 34 22 100 | Snijdersbergweg 93 1105 AN - Amsterdam, The Netherlands
+64 9 415 72 61 | 40-42 Apollo Drive - Albany, Aukland 0632, New Zealand

RB100-HP DATA SHEET • 06.19.24

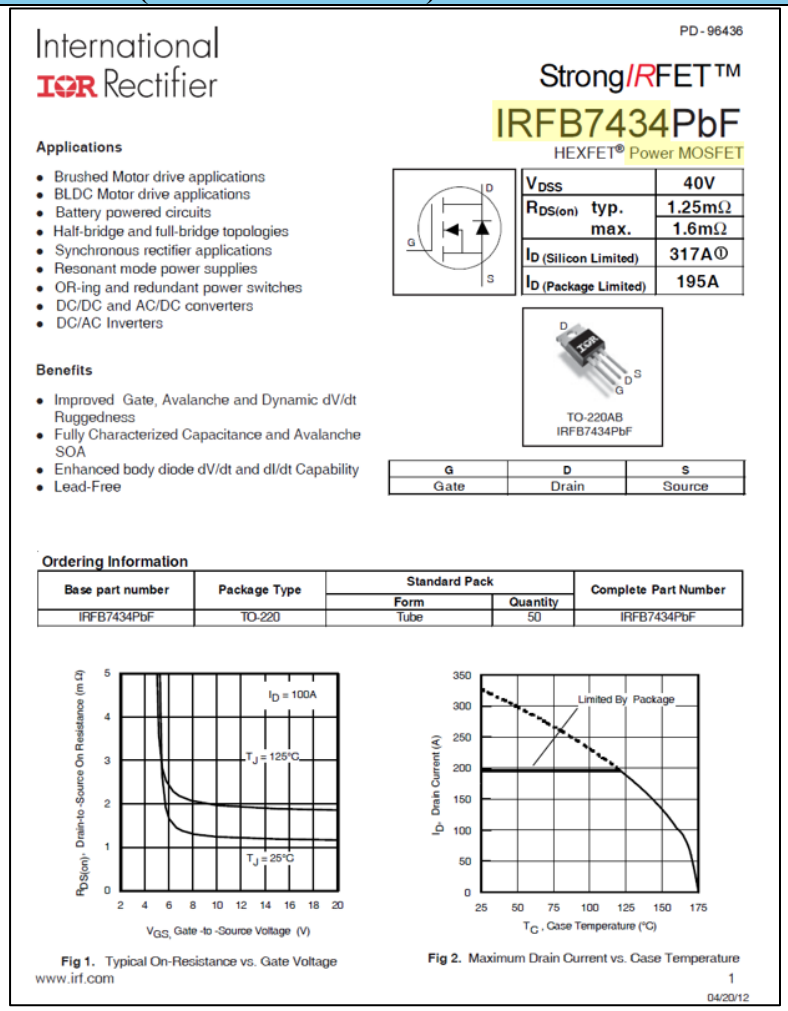
https://ceb8596f236225acd007-8e95328c173a04ed694af83ee4e24c15.ssl.cf5.rackcdn.com/docs/product/RELiON-Data-Sheet_RB100-HP.pdf (annotated).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	For example, as demonstrated by connecting the battery terminals of the RELiON RB100-HP to a computerized battery analyzer (*see* photo A below), the cutoff functionality is demonstrated by the termination of electrical current when the RELiON RB100-HP was discharged below its rated voltage (*see* photo B below). Similarly, the cutoff functionality is also demonstrated by the termination of electrical current when the RELiON RB100-HP was charged above its rated voltage (*see* photo C below). 

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
[14c-ii] said circuit board including a plurality of pairs of solid state switches with each pair of solid state switches connected in a parallel configuration to another pair of solid state switches,	The circuit board of the RELiON RB100-HP includes a plurality of pairs of solid state switches with each pair of solid state switches connected in a parallel configuration to another pair of solid state switches. 

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



PD - 96436

International
IOR Rectifier

StrongIRFET™

IRFB7434PbF

HEXFET® Power MOSFET

Applications

- Brushed Motor drive applications
- BLDC Motor drive applications
- Battery powered circuits
- Half-bridge and full-bridge topologies
- Synchronous rectifier applications
- Resonant mode power supplies
- OR-ing and redundant power switches
- DC/DC and AC/DC converters
- DC/AC Inverters

Benefits

- Improved Gate, Avalanche and Dynamic dV/dt Ruggedness
- Fully Characterized Capacitance and Avalanche SOA
- Enhanced body diode dV/dt and dI/dt Capability
- Lead-Free

V_{DSS}	40V
$R_{DS(on)}$ typ.	1.25mΩ
max.	1.6mΩ
I_D (Silicon Limited)	317A①
I_D (Package Limited)	195A

TO-220AB
IRFB7434PbF

G	D	S
Gate	Drain	Source

Ordering Information

Base part number	Package Type	Standard Pack		Complete Part Number
		Form	Quantity	
IRFB7434PbF	TO-220	Tube	50	IRFB7434PbF

Fig 1. Typical On-Resistance vs. Gate Voltage

Fig 2. Maximum Drain Current vs. Case Temperature

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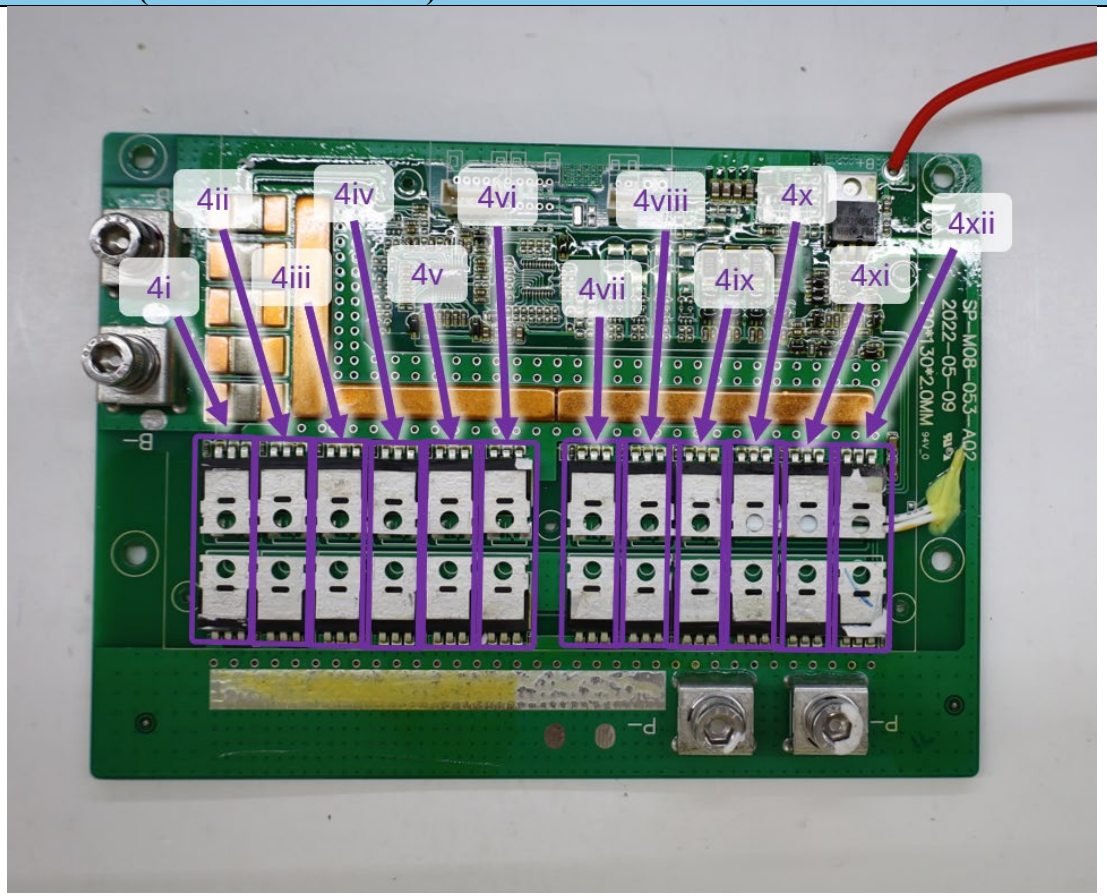
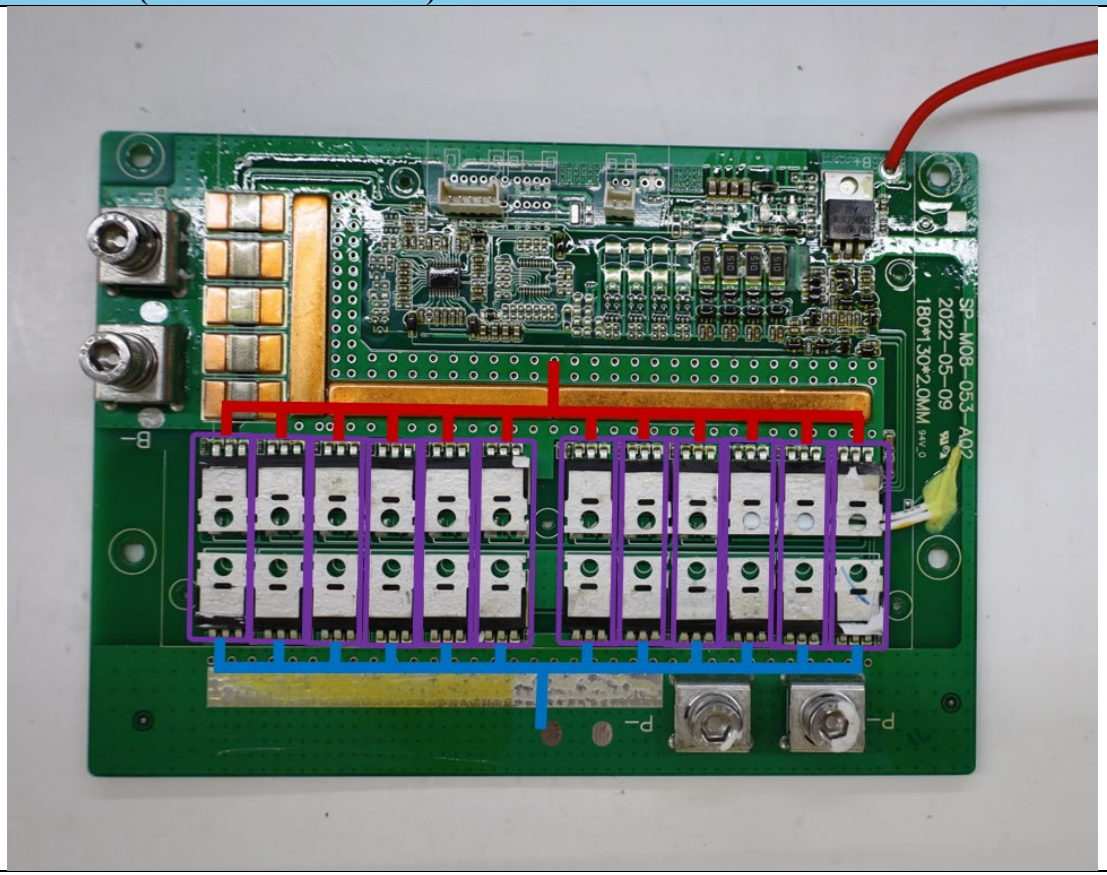
04/20/12

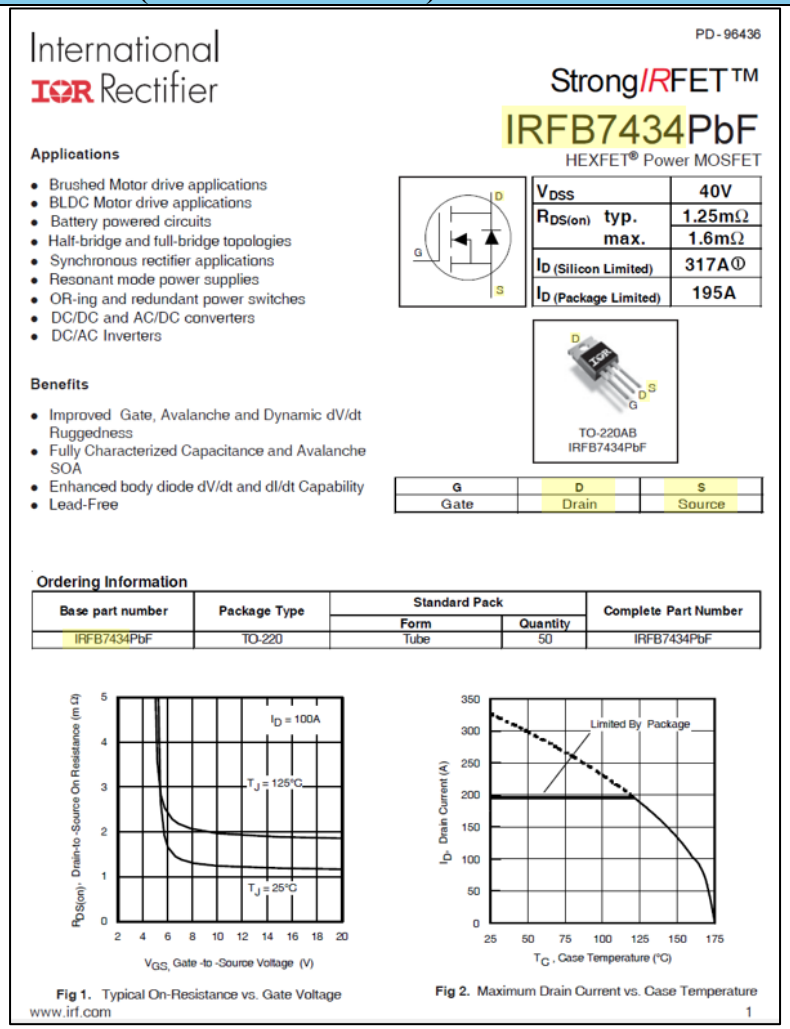
http://www.irf.ru/pdf/irfb7434pbf.pdf (annotated).

The solid state switches of the RELiON RB100-HP are arranged in pairs (e.g., 4i-4xii) with each pair of solid state switches connected in a parallel configuration to another pair of solid state switches.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	
[14c-iii] each switch having a source and a drain, the switches of a pair of solid state switchers being configured such that either the drains of the switches are connected or the sources of the switches are connected; and	Each switch of the RELiON RB100-HP has a source (i.e., “S”) and a drain (i.e., “D”).

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)



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V_{DSS}	40V
$R_{DS(on)}$ typ.	1.25mΩ
max.	1.6mΩ
I_D (Silicon Limited)	317A①
I_D (Package Limited)	195A

TO-220AB
IRFB7434PbF

G	D	S
Gate	Drain	Source

Ordering Information

Base part number	Package Type	Standard Pack		Complete Part Number
		Form	Quantity	
IRFB7434PbF	TO-220	Tube	50	IRFB7434PbF

Fig 1. Typical On-Resistance vs. Gate Voltage

Fig 2. Maximum Drain Current vs. Case Temperature

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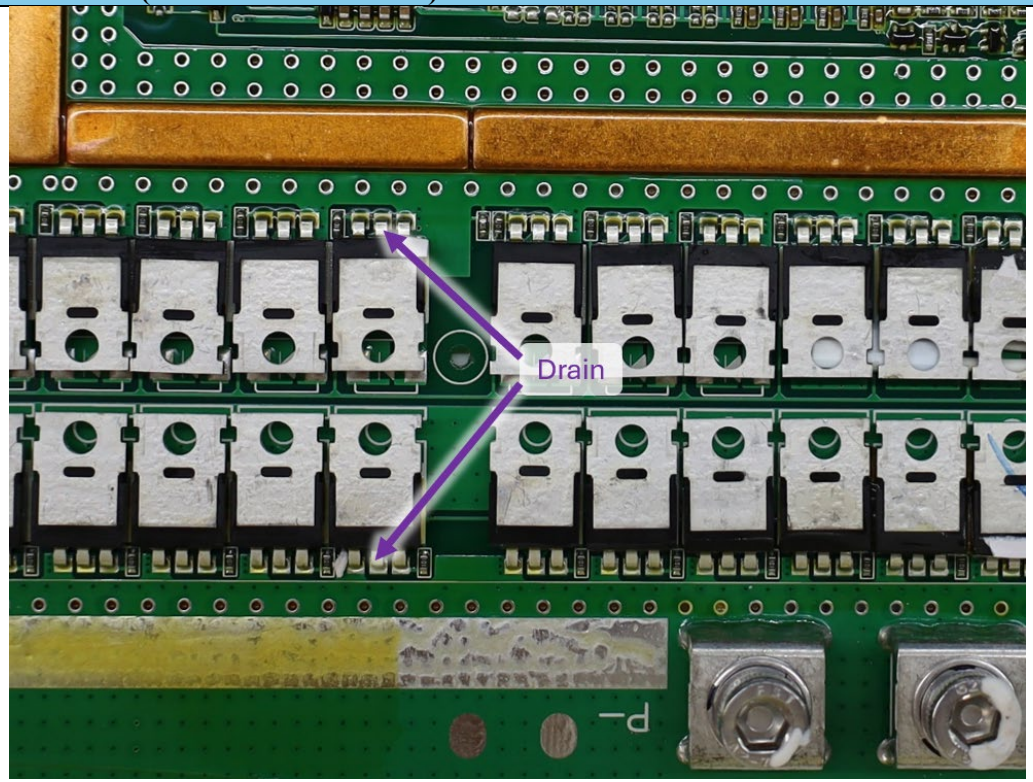
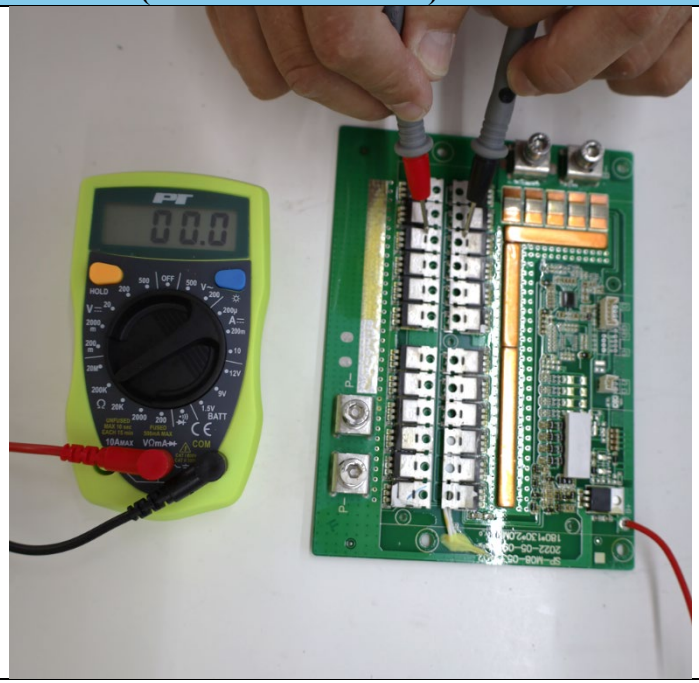
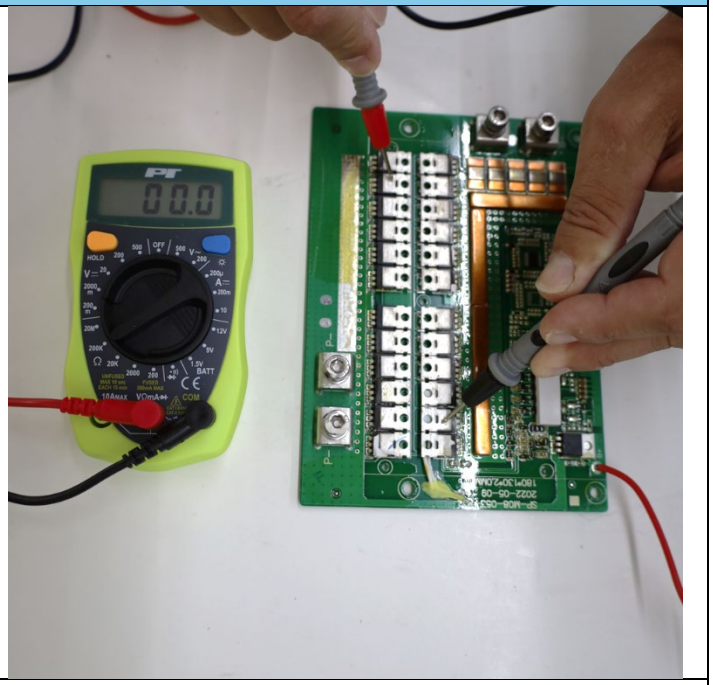
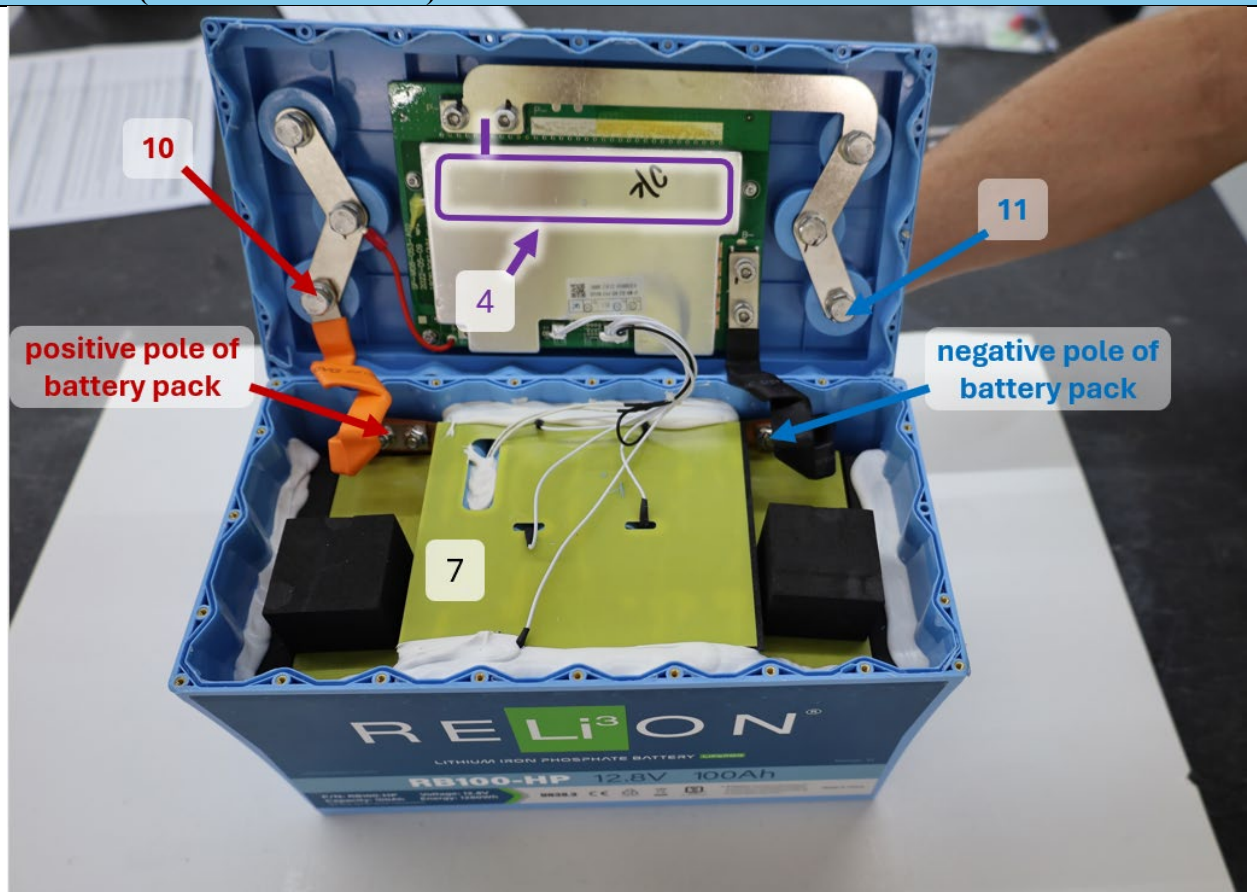
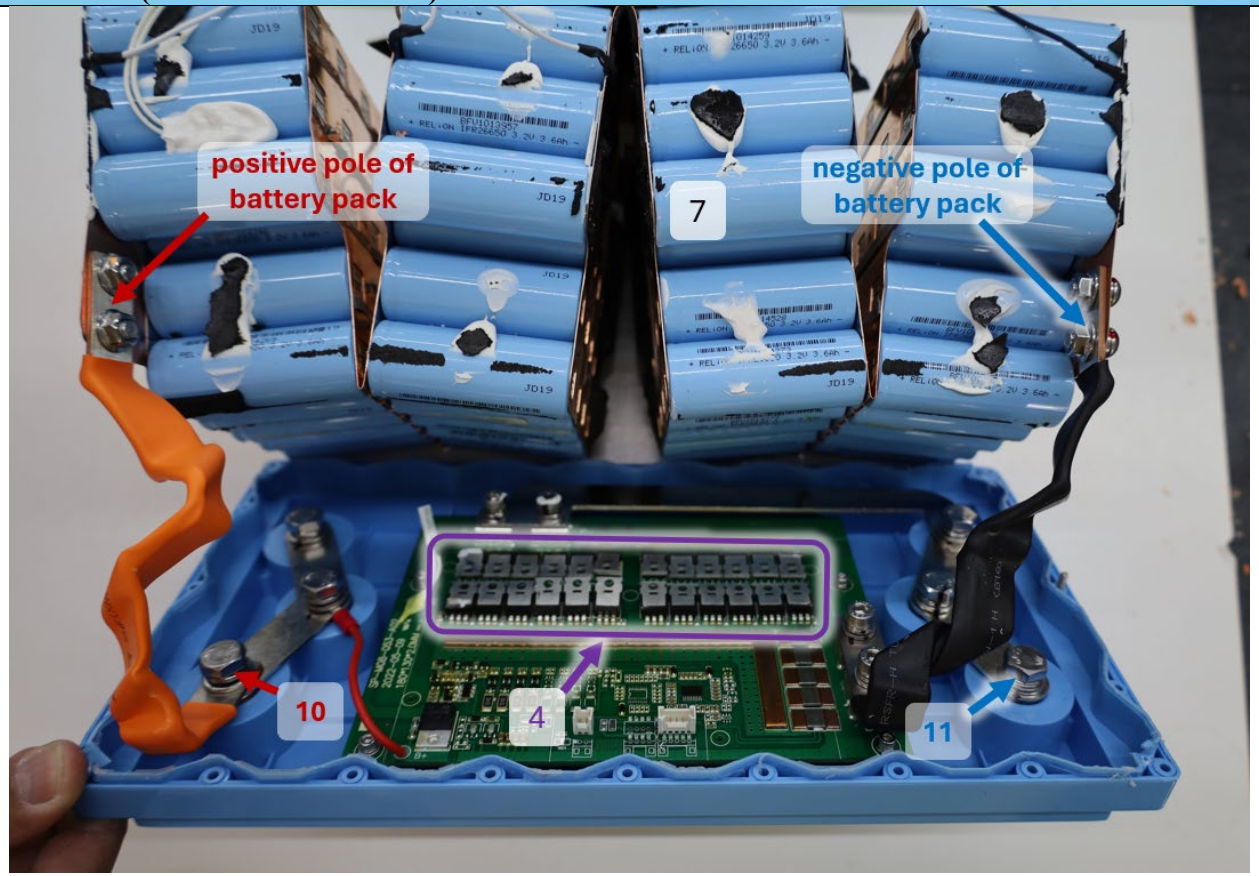
http://www.irf.ru/pdf/irfb7434pbf.pdf (annotated).

The switches of a pair of solid state switches of the RELiON RB100-HP are configured such that the drains of the switches are connected.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 For example, as demonstrated by testing the electrical continuity using a multimeter, the drains of the switches of the RELiON RB100-HP are connected, as shown by the nominal resistance measured between the drains of opposed MOSFETs.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	 
[14d] said parallel configuration of the plurality of solid state switches being connected in series with said one or more cells between said positive and negative terminals of the battery pack.	The RELiON RB100-HP includes said parallel configuration of the plurality of solid state switches (4) being connected in series with said one or more cells (7) between said positive (10) and negative terminals (11) of the battery pack.

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)
	

US9,412,994 Claim Element	RELiON (RELiON RB100-HP)